



CALIFORNIA LEGISLATURE
SENATE COMMITTEE ON ENERGY AND PUBLIC UTILITIES
SENATOR HERSCHEL ROSENTHAL, CHAIRMAN

Subject Hearing on
**THE OCTOBER 1989 EARTHQUAKE:
IMPACT ON PUBLIC UTILITIES**



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OCTOBER 1989 EARTHQUAKE: IMPACT ON PUBLIC UTILITIES



Friday, February 2, 1990
Public Utilities Commission Building
505 Van Ness Avenue, First Floor Auditorium
San Francisco, California

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SENATE COMMITTEE ON ENERGY AND PUBLIC UTILITIES

HERSCHEL ROSENTHAL
CHAIRMAN



AGENDA

SUBJECT: OCTOBER 1989 EARTHQUAKE: IMPACT ON PUBLIC UTILITIES

Public Utilities Commission Building
505 Van Ness Avenue, First Floor
Auditorium
San Francisco, California
Friday, February 2, 1990 -- 9:00 am to 1:00 pm

I. LOCAL GOVERNMENT PANEL

Mayor Todd McFarren
City of Watsonville

Jim Feeney, Asst Director
Public Works
City of Santa Cruz

Richard J. Evans
Director of Public Works
City & County of San Francisco

Henry Renteria
Emergency Services Manager
City of Oakland

II. ENERGY AND WATER UTILITIES PANEL

Steven H. Phillips
Manager, Gas System
Design
Pacific Gas & Elec Co

Gary Lambeth, Manager
of Operations Support
So California Gas Co

Dennis K. Ostrom
Engineering Consultant
So California Edison Co

Jim Leahy, representing
Independent Energy Producers Assn
& California Cogeneration Council

Donald Houck, President
California Water Assn &
Chief Operating Officer
California Water Service Company

Paul Schreiber
Vice President of Operations
San Jose Water Company

III. TELECOMMUNICATIONS PANEL

Michael Caren
Division Manager
Emerg Preparedness
Pacific Telesis

Charles F. Mayfield, Jr
Division Manager
Telecommunications Svcs
AT&T

Michele Pereira
Administrator
Emerg Preparedness
GTE California

Jim Dixon
Executive Vice President
McCaw Cellular

Mel Kemp
Director of Operations
MCI Telecommunications

Jim Butler, Administrator
of Business & Govt Affairs
Pacific Region
GTE Mobilenet

J. Bowmar Rodgers, Jr.
President, Western Division
Business & Marketing Group
US Sprint

IV. STATEWIDE GOVERNMENT PANEL

John Passerello, Asst Director
Response and Recovery
Office of Emergency Services

Charles Imbrecht
Chairman
California Energy Commission

Al Tolman, Assistant Chief
Telecommunications Division
Dept of General Services

Lee Deter, Chief
Office of Traffic Improvement
CalTrans

Russ Copeland, Assistant Director
Safety Division
Public Utilities Commission

V. OPEN MICROPHONE

Sergeant-at-Arms will have a sign up sheet available for anyone who might wish to add a few remarks pertinent to this hearing.

CHAIRMAN HERSCHEL ROSENTHAL: Good morning. You hear this all right? Very good.

I'm Senator Herschel Rosenthal, Chairman of the Energy and Public Utilities Committee of the Senate. I called this hearing today to evaluate the impact of the October, 1989 earthquake on public utilities. At the outset, I want to thank the witnesses who have come to testify on behalf of their utilities, private companies, local communities and the state agencies.

The northern California earthquake claimed over sixty lives, injured thousands, and resulted in billions of dollars in damage. Yet experts agree that given the magnitude of the quake and the densely-populated region that it struck, the situation could have been much worse. Experts have also warned us that this is not "the big one", and we can still expect a major quake to strike southern California. Whether it will come tomorrow or in ten years is unknown.

But while we can't accurately predict where and when the next quake will occur, we can insure that our utilities and their customers are well-prepared for such a disaster. In the last earthquake, we were lucky. Government leaders, utility companies and individual citizens cooperated and worked together to restore vital services. But we need more than luck. We need to insure that California is prepared for the next one.

As we proceed this morning, I would like each of the witnesses to consider these questions: do the utilities have adequate emergency plans; do local and state agencies and utilities have clear communication and coordination roles during a disaster; and does the public know how to deal with the disruption of utilities services?

Every day we pick up our phones, use electricity, turn on heat and water without a second thought. But when a natural disaster strikes, we are confronted with the threat of losing the vital necessities that we take for granted. When should we turn off our gas? How do we strap a water heater? How do we go to work if bridges and roads are damaged? What if our water service is disrupted? How do we get through to 911 emergency phone service? And will our phones even work?

In this hearing we will seek the answers to these and many other questions. The past few months have provided an opportunity to distance ourselves from the drama of the event and to look carefully at what was done and where improvement might be needed. The two minor earthquakes in Coalinga and Eureka just last month remind us that we must always be ready to deal with these issues.

This hearing will be divided into four panels. First the Committee will hear from local government leaders who will discuss how their communities' utility services were affected by the quake. Second, representatives from the gas, electric and water industries will testify. Third, we will hear from representatives of local, long-distance and cellular telecommunications companies. And last, state government officials will explain the role their agencies played in this disaster.

Let me conclude now with the ground rules for this hearing. You may submit written testimony, but please don't read it. Instead, take around five to ten minutes to summarize the major points you would like to make. Questions may follow each presentation.

At the conclusion of the hearing, we will have an open microphone session to take brief comments from persons whose views were not presented by the panelists. Those wishing to speak at the open mike session, should place their name on the sign-up sheet which is available from the Committee sergeant.

Before we begin the hearing I want to make a special introduction this morning. On my right is a Senate Fellow, Kim Alexander who, while with the Committee just a short while, was given the responsibility of putting this hearing together. And from what I've seen of what has been planned, I think she did a wonderful job. Thank you, Kim.

Let's begin our hearing then with our first panel of witnesses: Mayor Todd McFarren of Watsonville, then he will be followed by Henry Renteria, Jim Feeney and Richard Evans. Gentlemen.

MAYOR TODD MCFARREN: Thank you, Senator, I appreciate the opportunity to come and speak today. Just a little background information. Watsonville has a population of about 30,000 in the southern part of Santa Cruz County and our city hall was about 6.5 miles from epicenter. We experienced about ten million dollars worth of damage to the public infrastructure. We lost about 8 percent of our housing stock, about 245 residential units were red tagged and we had about seventeen million dollars damage to residential units. About 67 businesses were displaced from the downtown.

We are largely an agricultural and food processing center so the water system and the sewage system and the storm drain system are very important, as they are in all municipalities. In terms of our water system, the system serves about 11,800 connections, about 45,000 customers and our water supply is provided by a slow sand filter plant built around 1930 and eleven wells. Because of the quake, the filter plant's concrete filter basins leaked at the construction joints and the plant has been out of service since the earthquake. We're investigating sealing those cracks but, probably, although I'm not sure, we may have to retire the plant due to its age and the construction cost for repair. Pumps broke. We had a chlorine cylinder at the airport topple, releasing chlorine and we had about 56 main breaks. In terms of the impact on users, the power was cut off in Watsonville for about 48 hours. Water was restored to most of the people within that time period, although about 20 percent, or around 8,000 people, were out of water for varying periods. The mobile homes were hit very hard because of the water services and other utilities were actually torn loose.

One specific problem we had, there was some concern with contamination out at Pajaro Dunes where the pressure was lost and we did give a boil notice that lasted three days and no contamination was found. However, operating personnel were unable to determine from the State Health Department what safeguards or procedures would be followed, what testing methods should be used, what notification procedures would be acceptable and our Public Works Department thinks that this should be a statewide requirement. The city testing was unacceptable to the state, since our lab was not certified and we usually contract out for that. So that was a problem.

In terms of the sewer system, it serves the city and Pajaro Dunes and it is largely a gravity system. We have a treatment plant that was built in '85 of advance primary and it's a lot of heavy industrial use during the packing season. The earthquake didn't cause any complete blockage of sewer lines but there were several broken pipes and misalignments and a program is now underway to inspect a greater percentage of the sewer lines by video camera and we'll know more when that investigation is done. There seems to have been minimal damage to the treatment plant and I think that speaks well of the construction of our treatment plant. It was state of the art, I believe. There were some minor overflows, but essentially the sewer system made out pretty well.

In terms of the storm drain system, it serves the city and surrounding tributary areas and the quake caused a number of problems there. There was about 123 damage sites discovered in the underground pipes when the city began surveying our collection system. It wasn't until November that we started really our initial phase of investigation. We did about 20,000 linear feet of pipe and that's still underway as well. But there were no reported interruptions in storm drain service, probably because of the general lack of rainfall since the quake, so I guess that's one good point, although the farmers didn't like it.

In terms of some general points, I think generally the city had an excellent reponse and emergency plan. However, it worked really well for the police and fire and medical, but delays occurred because of the inability of water and service vehicles to move through traffic congestion caused by the emergency roadblocks and controls and it seems that this was not considered in our city emergency response plan, nor in the regional response plan. Also personnel were subject to long hours of emergency response causing fatigue and post earthquake sickness so some cross training would really be important for our sewer and water maintenance and operating personnel and this would provide some relief. As I said, we had--I think we had an excellent response, especially to the homeless, the water and sewage needs of the homeless. We had about 12,000 people that were out after the earthquake without any place to live. So hopefully we can maybe get some grant money or something to update our emergency response and to provide some cross training.

I would like to say that PG&E has done a marvelous job down there. We have about 800 people living in FEMA trailers and PG&E has started to come out and weatherize all those because the utility bills were so high. So we're really encouraged by that sort of response. Those are basically the comments I have.

CHAIRMAN ROSENTHAL: Very good. Let me ask a question. Were any of the utility company employees present in your emergency operation center.

MAYOR MCFARREN: We did have a PG&E--Mr. West from PG&E was available on a daily basis down at City Hall. So that was really important.

CHAIRMAN ROSENTHAL: But that was the only utility that had someone there at the...

MAYOR MCFARREN: That I know of, yes. Actually I wasn't in office at the time of the earthquake.

CHAIRMAN ROSENTHAL: I see. Did the 911 service work. Are you aware of...

MAYOR MCFARREN: The 911 service worked fairly well, from what I'm told from our police and fire. Although we did have--like I said, the biggest problem was with the water and sewage vehicles getting through and with the traffic congestion and it seems like there was no specific plan about how to get those vehicles through.

CHAIRMAN ROSENTHAL: Since the quake happened, what was the biggest utility problem in Watsonville?

MAYOR MCFARREN: Probably our biggest concern now is the filter plant. It's old and the construction repairs are maybe going to be prohibitive, although we haven't finished doing the investigation yet. So I think that's the public works largest concern.

CHAIRMAN ROSENTHAL: Have you revised your emergency plan since the quake? And if so, I'm just wondering whether you're including the utilities as part of that plan.

MAYOR MCFARREN: Yes, we are. We are revising, although it isn't finished yet, but we hope to make it, in terms of the city water and sewage an integral part of our emergency response plan in the future.

CHAIRMAN ROSENTHAL: What can the state do to help?

MAYOR MCFARREN: Well, it would be nice to get some grant money, I think, if possible, to help us update our emergency response. I think, frankly, Watsonville has--especially our fire chief and other emergency personnel have a lot of experience that they've gained through this unfortunate event. And we did, I think, have a very good emergency response plan to begin with. But I know our fire chief, in particular, has a lot of new ideas and I think it would be useful to our state and the nation in general and also I'm not sure how the cross training would work, but perhaps some funding for cross training of personnel.

CHAIRMAN ROSENTHAL: Senator Mello introduced some legislation dealing with that. We had it on the Senate floor, as a matter of fact, on Thursday. So you'll probably be hearing about that as it moves along. Thank you very much, Mr. Mayor.

MAYOR MCFARREN: Thank you, Senator.

CHAIRMAN ROSENTHAL: Now, I'd like to call upon Mr. Henry Renteria, is that the way you pronounce it?

MR. HENRY RENTERIA: Yes, Senator.

CHAIRMAN ROSENTHAL: Emergency Services Manager of the City of Oakland.

MR. RENTERIA: Yes, sir. On behalf of Mayor Lionel Wilson, the Members of the City Council and our City Manager, Henry Gardner, I wish to extend my appreciation for your invitation for us to speak before you today.

I am the Emergency Services Manager for the City of Oakland. Therefore, I have the primary responsibility for emergency planning, the overall emergency response and leading the recovery efforts for the City of Oakland due to this earthquake.

On October 17, 1989, the City of Oakland became the most heavily impacted jurisdiction in terms of loss of life, and property due to the Loma Prieta earthquake. The collapse of Interstate 880 claimed 42 lives, the damage to the City has been estimated 1.2 billion dollars. Oakland also had two very unique problems as a result of this earthquake. The loss of our City Hall and both of our City Hall annexes which resulted in a thousand of our employees being displaced throughout the emergency period, which included key departments, such as the City Manager's office, City Attorney, Finance Department, Personnel, Office of Community Development and Office of Finance. The other unique problem was that we lost over a thousand of our low income housing units, which represented almost 90 percent of our entire stock in the City of Oakland. This created special problems because we had a different population than is normally planned for show up at our emergency shelters. Consequently, the result and the working relationship with the schools and the Red Cross was severely maxed out and taxed over this issue.

As far as utilities are concerned, I'd like to mention a few things, then I will touch just on all of them. The emergency broadcast system: As you know, the emergency broadcast system is a system for local jurisdictions to be able to communicate with the public in terms of what we need the public to know, what information we could get out and, in terms of having a dedicated process for us to communicate. Also the Emergency Broadcast System is a result of the old Civil Defense Act, the old Civil Defense Program. Therefore, that must be kept in mind as we discuss this. We used the normal procedures for activation which is to contact the County. The county, in turn, contacts the major radio stations that are identified as EBS stations.

This proved to be futile. For several reasons. One is we had a flood of media in town due to the World Series. We had every major broadcast station in town already. It was really not necessary to use the Emergency Broadcast System. In fact, it was more important for us to be able to communicate with all the stations at the same time. So we used, what I consider one of the best new forms of technology around now, and that's the fax machine. We were able to fax our public service announcements or messages and our information to all the media at once including the Emergency Broadcast System.

I think this is important to realize because EBS was really--the original intent was that only certain stations would survive a major event and in those days the "event" was nuclear war. And therefore, EBS was geared towards that. This was not a nuclear war we were dealing with and therefore I think that needs to be revisited--that whole issue. The use of the fax machine was obviously a good vehicle for us to use but also the fact that we set up a press command post at the Interstate 880 collapse. This allowed us to deal with every single major media person who was in town. Media created--the fact that all the media was there created its own problems also, but we don't have enough time to go into that detail today. But we did--we were able to communicate with them all on the scene as well. This posed some other problems in that too much emphasis was placed on Interstate 880 and not enough coverage was given to the rest of the City of Oakland and to the rest of the Bay Area, which was also impacted. Too many people from other parts of the country saw just the Bay Bridge and Interstate 880 and didn't really see the other parts of the community that were hurt.

Pacific Bell: This was the only utility that showed up at our EOC, even though the Emergency Plan calls for representatives from each of the utilities to be there. The Pacific Bell representative was the only one that came and my hat's off to not only this company, but to that individual because he was stranded in San Francisco after the earthquake. It took him hours to get to our EOC, but he did show up. He immediately set about to do his task, which is to help us in our communications capabilities out of the EOC. Our EOC was in the middle of refurbishing so we did not have all of our telephones installed. He immediately requested crews to come out to put in some auxiliary lines. He also set up our hot line which is another very important factor that needs to be considered. 911 is not the type of service that should be used during the disaster like this. In fact, in our case it was overloaded. One of the initial requests from our police department was to get information to the public out not to use 911 unless it was a life and

death emergency. It was fine to do this, but in order to communicate that kind of message to the community, you've got to give them a different, alternate number to call. We set up a separate hot line in EOC just for public information, for inquiries, and for people to call who just need someone to talk to. Therefore, relieving the pressure on 911.

The Pac Bell representative was also instrumental, together with the Cellular One Company in acquiring cellular phones for all of our displaced departments. This was a God-send. The fact that we had these pieces of equipment within 24 to 48 hours, over a hundred and fifty pieces of equipment, allowed our department heads to be able to operate out of their automobiles or their homes and conduct some of the city business that needed to be conducted. The cellular phones was the other piece of machinery that I take my hat off to.

CHAIRMAN ROSENTHAL: Is that because you couldn't use the phone system?

MR. RENTERIA: The phone system was overloaded but we never really lost communications entirely. There was some temporary losses of communications. We could call out, but calls wouldn't be able to come in. We were heavily relying, at that point, on our amateur radio system, which is also another part of our emergency plan and our electronic radio communications. But the phone system was never really down for a long period of time. Our main problem is we didn't have offices for our key departments to operate out of, so the cellular phones were instrumental there.

PG&E: Some loss of power occurred throughout the City of Oakland, but especially along the East 14th Street corridor, which is a main corridor throughout Oakland. There was temporary loss throughout the City, but the majority of it was restored within two to three hours. The loss of power, especially near the downtown area and the loss of traffic and street lights was a major concern as nightfall was approaching.

I'm glad to say that our citizens performed admirably in self policing themselves through traffic lights. There was no severe problems, neither were there any major accidents. There was very minimal looting--this is another area we were always very concerned about and most of the experts predicted widespread looting in these types of conditions. It did not occur--not in Oakland.

One question I do have for PG&E, which I just found out yesterday. They did acquire the use of the military to deliver some resources and this is a major concern for me because in the City of Oakland, we

had a dire need for using the military and we never received that support. So I question how a utility company can use the military, and what prearrangements are made where a local jurisdiction cannot do this.

CHAIRMAN ROSENTHAL: We'll ask PG&E how they did that.

MR. RENTERIA: Please, I intend to ask them, too. East Bay MUD--there were no major problems with water--flow or supply. Our main concern and always has been, is the Oakland hills because of the fire problems we've had in the hill area. And we've already had one major catastrophe in the '50's and '60's concerning a major hill fire. So fires in the hills have always been a concern. There were very few fires throughout this earthquake and they were put out very promptly. But there were no major problems with our water supply.

Transportation: the loss of the Bay Bridge, and the loss of Interstate 880, of course, caused numerous amounts of problems and congestion throughout the City as the weeks progressed. Immediately there were no immediate problems. People left their cars or went back home. On the short term, with the help of Caltrans, we were able to reroute traffic and maintain some control. In the long term, the use of public transportation became a God-send. Again, people in Oakland, at least, did rely on public transportation. The ferry system, BART, proved to be a major resource for us.

CHAIRMAN ROSENTHAL: What is the Mayor's position on the use of ferries?

MR. RENTERIA: I think the Mayor, in fact I attended a meeting with the Mayor where he did express support for the use of the ferry system. I think there is some concern that the ferries that we were using, or are still using, are not the state of the art type of equipment and that may have caused some people not to want to use them.

CHAIRMAN ROSENTHAL: Do you think there is a role for the state on this issue?

MR. RENTERIA: Absolutely, I think it's all part of mass transit.

In summary, I think the state needs to emphasize more to the utility companies the importance of their cooperation in local government, especially with local plans, the preparedness response recovery and their involvement in our local emergency operations centers. I understand that there can't be a utility representative in every single local EOC throughout the northern California area, and I'm not promoting that, but I think there are some key issues that need to be addressed when a disaster like this

strikes and it is obvious that certain jurisdictions are more impacted than others, then it is obvious that those jurisdictions need the support of the utility companies there.

CHAIRMAN ROSENTHAL: One final question. Did you experience any gas leaks?

MR. RENTERIA: There were no major gas leaks that we experienced that I know of.

CHAIRMAN ROSENTHAL: Right. Thank you very much, Mr. Renteria. Mr. Evans, Director of Public Works for the City and County of San Francisco.

MR. RICHARD J. EVANS: Thank you, Senator. Good morning. I'm appearing on behalf of Mayor Art Agnos and to tell you a little bit about how we saw the utility company response in San Francisco. The public utilities, gas, electric and telephone services, which were really disrupted, we were without electric services for anywhere from one to four days in various parts of the city depending upon where the breaks were and how they could restore the power to the city. I understand the Navy came over with a ship from either Treasure Island or Alameda Naval Air Station and actually gave a jump start to one of our power stations for PG&E which helped us get back up. That was one major concern because of the electric power loss and that was the loss of traffic signals and street lights in the downtown area and we lost power to one of our sewage pumping stations and it was restored just in the nick of time. We had brought in an emergency generator to get the thing started. As you know, we had rain on Friday and Saturday and if it just hadn't been restored, then we would have had a major spill. As it was, it wasn't a problem. But the gas services--there was severe gas failure in the Marina District, especially. And PG&E came in there and replaced eleven miles of gas lines. It was basically a very old set of lines that were in the Marina. That, combined with the severe ground motion and the conditions caused by the soil there, I think, contributed to a severe--to make the problem more severe than in other parts of the city. There were isolated gas leaks other places in the city, but they were dealt with in between 12 and 36 hours and it didn't appear to be a major problem, yet.

Telephone service was disrupted, I think again, like what they experienced in Oakland. The overload use on the system, even in EOC, we could sometimes call out and not get calls in and at other times we couldn't get calls in, could call out. It was kind of a frustrating issue for us. We have our own radio systems for the various Departments that respond to these disasters, to emergencies, so I think that our radio system proved invaluable.

The water service to San Francisco is done by our City Water Department and we had one major problem. We had a tank fail here on Jones Street and a high pressure fire service main in the Sixth and Folsom Street area which contributed to the loss of water and the lack of water for the fighting of fires in the Marina district. Again, the age of the old lines contributed to that problem. They solved the problem. It was interesting, when we were first watching, the smoke from the fire was drifting over the city in a southerly direction and then somebody up there likes us, because the wind quit and the smoke went straight up into the air and the fire was contained. They brought in a fire boat. They brought in a portable hydrant system which is an overland method for transporting water. We have on the--right now an action that's been approved by the voters and that is a fire service bond issue that was approved and we've been building high pressure water lines for the last year now and we're building cisterns and I think that some of the problems we saw then, we can relieve.

The sewers came through the earthquake in fairly good shape. We had about 40 sewer breaks. Some of those--you might think that the old brick sewers that we have that were built prior to 1906 or thereafter would fail, but those came through fairly good. Even a lot of the sewers that stood up in 1906 are still usable, still working. We've had isolated problems. One of the biggest problems is that when you get a water main break, if the soil is washed out, the sewer will fail or one or the other will break and contribute to the other. In the Marina we had this problem at one location where both the sewer and the water supply system broke in the same point. This caused us concern. We put out boil instructions, the water lines were purged and everything was tested in our labs and the water was pronounced safe and so people were able to go back to using the water.

CHAIRMAN ROSENTHAL: Do you use PG&E's power to pump your city's water?

MR. EVANS: Yes, we do.

CHAIRMAN ROSENTHAL: Did you have any preexisting emergency agreements with them as part of your plan?

MR. EVANS: We have--we don't have any emergency agreements with regard to what quadrant of the city will come up first. In general discussions with PG&E, we've indicated where the emergency responses need to be. San Francisco being as, I guess, compact as it is, with the needs fairly uniformly distributed throughout the city because we have hospitals throughout the City, we have emergency

response facilities throughout the city. It's pretty hard to say this area gets it first. As a matter of fact, the downtown area, the northeast quadrant of the city was the last area to get help. The people seemed to respond to it--one of the issues that has been raised is the loss of fresh water to the high rise buildings because they don't have the pumps operational and the loss of elevator service in the high rise buildings. Now we're looking to changing the code to allow the standby generators to have enough capacity to allow the pumps to operate to provide water into the high rise buildings, drinking water and also to provide for the elevators to be brought back on line for evacuations and for emergency access in the buildings.

CHAIRMAN ROSENTHAL: Just generally speaking, do you believe that the utilities coordinated well with the city?

MR. EVANS: In the--PG&E was present in the EOC shortly after the earthquake happened. PT&T came on board a little bit later. I thought they responded with proper activity levels. There was in the Marina, which is where we had the most concentrated area of damage, the estimate originally was that they got to work round the clock 24 hours a day until some time in January to restore the gas and electric service in that area. I appointed my assistant to take charge of the area and establish some ground rules. We would not allow work between midnight and 6 a.m. for two reasons. One, the residents of the area that were still there did deserve some peace and quiet and 2, working after dark in those conditions, I thought, was contributing to the possibility for accidents. As a matter of fact, there were a number of pedestrian trips and falls and I thought, let's just work from six in the morning to midnight. It was interesting to note that the program she put together coordinating with not only PG&E but gas and sewer and all the other people that had to get into the area to do work, the people in the Marina that had to-- could get back to their homes because they were safe, could cook their Thanksgiving dinners at home, either electric or gas power. I think that was a tribute both to the way the city organized the operation and PG&E responded to it.

One of the concerns I have with regard to the utilities--all the utilities, and I'm sure that these other people will have the same concerns, as Mother Earth settles back into place, as the ground settles, as we have winter storms and increased rainfall, we're going to see some more failures. We've had three major water main breaks in San Francisco since the earthquake and I think a couple of them we know are in areas where there was some, either some ground movement or, you know, some severe shaking and

because the infrastructure is underground, much of it, what we're talking about, that it is underground, it's hard to inspect. We're TV'ing our sewers, like Oakland is, but it's still, when you TV a sewer, all you can see is the inside of a hole, you can't see the condition around the outside of it. So our concern is what's going to happen as we move through the winter, through the rainfall season, and in case there may be some minor earthquakes or just settling of the ground.

Finally, I just wanted to comment a little bit, I've been asked to comment a little bit in regard to the emergency broadcast system. I agree with Oakland, it didn't work. There was too much press in town, our EOC, if you've seen it, it's terrible. We have, as part of that fire bond issue, planned to evaluate--to redo the EOC. I'm glad we had the earthquake, from one sense, it gives us a chance to reexamine what we were planning on doing and developing a program, I think, that will better address the needs of the press and the needs of the department heads that respond to it.

The trans-bay transportation, I was asked to comment about it. There's been some expression with regard to confusion. The people that I spoke to that used it, they were very pleased that it was there. We went down and assisted the Port in establishing landing areas and paved some areas for them so the people could get off the ferry boats. I don't think--I think anybody that thinks that an operation like this can be put in place as quickly as it was without confusion is looking--I think they're looking into something that they just can't have. It's not reasonable to expect there won't be confusion.

Any questions, I'd be glad to answer them.

CHAIRMAN ROSENTHAL: Now, how can the state better assist you to ensure utility service and telecommunications and emergency broadcast in such cases. What should the state be looking at?

MR. EVANS: I think that in the development of hazard mitigation plans, the improvement of our own radio systems. For example, in San Francisco, our own radio system that each department has--ours needs help. And these are expensive systems to replace. There's a lot of rules that govern how radio systems can be set up. I'm not a radio communication person, but I know what I need in the way of a radio system. If there is something the state can do in that line, I'm not sure. Our plans in San Francisco, both utilities and the city plans are adequate to deal with the earthquake. The communications that we experienced with the utility companies was clear and it was good and it was good coordination.

Our public's ability to deal with disruption is an area—I'm not sure the state can help us here, either. I was back in Charleston when Hugo came through. The way information went out to the public in regard to who they would call for getting their tree taken off their house. Who they would go see for loans, this was done on a TV channel back there. It ran 24 hours a day. It had panels. It showed numbers and who to call for what and it also had talk show hosts. It just went 24 hours a day for, I think, seven to ten days after the event. And there was an extreme effort—it was a very major effort to give the information out. They have hurricanes, a lot of hurricanes, so they have more practice in this and I think if maybe if the state can borrow some of their tools in communications with the public, that might be a help, too.

CHAIRMAN ROSENTHAL: What about, because of what you saw in the use of the ferries, what is the City of San Francisco's position on increasing commuter ferry service.

MR. EVANS: The City has not taken an official policy position on that yet. They're having hearings and the Board of Supervisors is having hearings at the present time, both with regard to the earthquake, post earthquake activities, what we might plan for the next one, as well as the issue of the Embarcadero Freeway. So they will be developing policy.

CHAIRMAN ROSENTHAL: Okay. Thank you very much.

MR. EVANS: Thank you.

CHAIRMAN ROSENTHAL: Mr. Jim Feeney, the Assistant Director of Public Works, City of Santa Cruz, welcome.

MR. JIM FEENEY: Yes, good morning. Thank you, Senator Rosenthal and Members of the Committee. I also am here on behalf of our mayor, Mayor Mardi Wormhoudt, who was unable to attend today and to talk about how our coordination effort was during the emergency with the utility companies. It may be helpful to talk a little bit about the City of Santa Cruz first, and, in general terms, the type of damage that we did suffer.

As most of you are aware, our downtown area in the City of Santa Cruz, population of about 50,000 was hit quite drastically. We have lost something on the order of estimates of 10 to 15 percent of our sales tax base. As a for instance, we've displaced some 200 plus businesses and hundreds of residents in the downtown area, so quite a devastation. We've lost—we had damage to five bridge structures. Santa Cruz, itself, is divided by a river, east to west, which can, of course, present transportation difficulties

and in emergencies such as this. The damage spread from the downtown area in the very low lying reaches, which originally was a river bed and that's why we experienced so much structural damage because of the loose soils, very very loose, unconsolidated.

Our emergency response was actually quite good. We have an excellent emergency preparedness plan. That plan we have been through a number of disasters in Santa Cruz, the most recent being the 82-83 flood events, so it has been fine-tuned over the years, so it is really a very effective system. The basis of it is the incident command structure. We have a city emergency operations center that's linked to the county's emergency operation center which, in turn, is linked to state OES and that is the chain of command it does follow. At the county OES, that is where the utility company representation is and that in the very first or initial hours of the event, we had some difficulty in communicating with the utility companies. One of our initial requests, along with many, many others, was that we get representation right to the City EOC center. We've had followup conversations with both PG&E and Pacific Bell and they're in agreement that that, in fact, would be very helpful and we're modifying our plans to reflect that.

The response by the utilities, again, I think, was an excellent response in general. As a for instance, PG&E has approximately 22, 23 thousand service customers--electric service customers. The whole system initially went down when the earthquake did hit. But within the first 24 hours, we had better than 80 percent back up on line and within two days after the main strike, we were back up at just about 100 percent. Gas was a little bit slower coming back up. However, the experience that we had on gas outages and the relights, we had a couple of fairly substantial gas main breaks and one of the coordination problems or difficulties, in the very initial hours were the fact that we were responding with our emergency ops plan to those areas and did evacuate a couple of areas and we didn't have a real clear sense of exactly where PG&E was until we had responded also to the scene so there were minutes lost and those minutes can be critical. Hence, the reason for needing on-site representation in the op center.

As far as the telephone communications, similar to, it seems, everyone else's sets of circumstances, it wasn't a matter of having outages with the phone systems, it was a matter of overloaded circuits. And that, of course, presented some difficulties. The difficulties, particularly, at the emergency op center in trying to communicate directly where there would be some time lost in trying

to get through to the county OES when other radio frequencies or amateur frequencies were getting jammed up a little bit. What Pacific Bell does have is a number of priority phone listings. It's part of our emergency response plan. Those priority listings are key governmental centers. They are our emergency ops centers, personnel who are to be stationed or manning those emergency centers, they're first call up on their prioritization are those series of numbers and that worked quite well. One of the things we have been discussing with Pacific Bell is the installation of dedicated trunk lines for emergency operation centers. They say they are working toward that. We don't have a time frame from them. However, that would be of great benefit to have some type of dedicated phone lines for the emergency operations center from city to county on to state OES. It would be of great benefit.

CHAIRMAN ROSENTHAL: Did you use the cellular system at all?

MR. FEENEY: Yes, we did. Shortly after the earthquake hit. We were up and running at our EOC within a half hour of the time of the earthquake strike, and with the difficulty with the phone lines, we have, as does most of the other agencies, their own internal radio frequencies for police, fire, public works, etc. But we supplemented that with cellular phone systems. In addition to that, we also got several score of additional hand held radios with our frequencies for police, fire, public works. So the cellular phone communication for key personnel was of great benefit, as were the additional radios that we brought in.

And you have been asking the question what could be done to enhance or improve our ability to coordinate with, say, the utility companies, to coordinate our own efforts. And I think communication is an absolute number 1 item. Funding availability is limited from the city's perspective. If there is a way that the state can explore that with the city in working also in conjunction with the utility companies so that there are direct communication links that are already preexisting, preestablished with redundant systems--that would be of wonderful benefit, I believe.

CHAIRMAN ROSENTHAL: You have a new 911 system. How did that do?

MR. FEENEY: Well, I don't have a lot of personal experience with how it went. I happened to be incident commander and was not reliant upon the 911 system during the course of the several first days of the earthquake and aftermath. From what I have heard from other sources within the city, that the system was sporadic because of some overloads. There were uses of the 911 system that were maybe not

exactly appropriate. People would call up and they were not life safety situations and tying up portions of that communications system.

CHAIRMAN ROSENTHAL: Thank you very much. We'll call now our next panel. Thank you, gentlemen. The Energy and Water Utilities Panel: Steven Phillips, Gary Lambeth, Dennis Ostrom, Jim Leahy, Donald Houck, and Paul Schreiber.

Okay, just the ground rules again, in case you were not here at the beginning. Five or ten minutes each. I hope that you don't read your statements, but you'll give them to us, they'll be part of the record. We want to hear the important things that we think need to be said and give us an opportunity to ask some questions after your presentation, sometimes interrupting. I call upon Mr. Steven Phillips first, the Manager of the Gas System Design for Pacific Gas & Electric Company.

MR. STEVEN H. PHILLIPS: Good morning. Thank you for the opportunity to address the Committee this morning. I thought to start with, I'd just give a little summary of what our experiences were in terms of damage and response after the October 17 earthquake. The earthquake caused about 1.4 million electric outages and over a 160 thousand gas outages.

On the electric side, major damage was sustained at our Moss Landing Power Plant on Monterey Bay, a 750 megawatt unit was damaged there, as was the high voltage switch yard connecting that plant to the transmission system. In San Francisco, a 217 megawatt unit at Potrero Power Plant tripped off line immediately after the earthquake and shortly thereafter our two 106 megawatt units at Hunters Point tripped off due to lack of demand to feed. In San Jose and San Mateo we suffered major damage at two key substations, Metcalf and San Mateo Subs and that was a major contributor to the interruption of electric service on the Peninsula and areas south of San Jose. At Diablo Canyon Nuclear Power Plant near San Luis Obispo, which is about 140 miles south of the epicenter, unit 1 was down for refueling at the time, had been for 11 days. Unit 2 was up and running and continued to run throughout the incident, operated very smoothly. We were fortunate, as was most of the cogeneration community that most of our generating facilities did very well and did not suffer significant damage. Damage to our transmission and distribution systems primarily at major substations was the main cause for the loss of service following the earthquake. The qualifying facilities performed as we hoped they would, and the operating relationship that we developed worked very well in allowing us to restore service. By Thursday evening,

48 hours after the quake, we had restored service to all but about 26 thousand of the 1.4 million customers that were out.

On the gas side, the restoration was not quite as swift. In the first few minutes and hours after the quake, approximately 155 thousand gas customers, in an abundance of caution, shut off their gas service to their homes and businesses. In addition, PG&E crews shut down four separate systems because of damage to those systems. Three of those systems in the Los Gatos and Watsonville area affected about 1,250 customers and, of course, the other areas, the Marina area of San Francisco, which affected 5100 customers. So, all in all, we were faced at that time with relighting over 160 thousand customers.

PG&E service personnel were immediately brought in from unaffected areas and calls went out to Southern California Gas Company, San Diego Gas and Electric, Sierra Pacific in Reno and Mountain Fuel Supply in Salt Lake City. By Saturday, we had almost 1,200 personnel in the field and restored about 58,000 customers. On Saturday morning, we also requested assistance from Washington Natural in Seattle and Northwest Natural in Portland. By the following Wednesday night, approximately eight days after the earthquake, we had restored over 150,000 customers. Essentially the customers that were left unrestored were in the areas that had been shut in and services to buildings that had sustained considerable damage and could not be relit.

The four systems that we did have to shut down due to damage had to be completely rebuilt. The systems in the Los Gatos-Watsonville area were rebuilt within about three weeks after the quake, a job that normally would have taken well over a month. In the Marina area, the largest of the systems shut down, a work force of over 400 construction personnel from throughout our service territory was mobilized and by working 16 hours a day and seven days a week, I had service restored to all the Marina area before Thanksgiving. The temporary construction yard that was set up at the Presidio, essentially became PG&E's largest service center overnight. Over all, our gas transmission and distribution systems came through the quake very well. We only had one transmission line leak, down by Hollister, and of the 15,000 plus leak calls responded to in the days after the quake, we only found a little over 1,000 leaks and most of those were at services.

For many years, PG&E has had emergency plans in place to deal with localized emergencies, but in 1988 we realized that we needed something in place to deal with emergencies on a larger scale. During

1988 and early 1989, our emergency operations center was developed to deal with system type emergencies. We tested the EOC in June in a mock exercise, and, in fact, the scenario used for that was a 7.0 earthquake on the Hayward fault. We learned a lot from that exercise and our EOC was activated within minutes after the earthquake and functioned very well during the restoration. However, as you can well imagine, we learned quite a bit more from the actual experience than we did from the mock exercise and we're now in the process of reviewing the lessons learned and we'll be sharing those lessons learned in the days and weeks to come.

CHAIRMAN ROSENTHAL: Very good. Commissioner Duda, would you like to join us?

COMMISSIONER FREDERICK R. DUDA: Senator, I'd be pleased to but I'm scheduled in the next auditorium for a conference.

CHAIRMAN ROSENTHAL: Okay. It's good to see you.

COMMISSIONER DUDA: And I shall return.

CHAIRMAN ROSENTHAL: Thank you very much.

COMMISSIONER DUDA: Famous statement.

CHAIRMAN ROSENTHAL: Right.

COMMISSIONER DUDA: Thank you.

CHAIRMAN ROSENTHAL: First I'd like to, before going any further, I want to commend PG&E and the other utilities, those that helped you when you had a problem responding to this disaster. And it was interesting to hear that the other utilities, when called upon, sent personnel to help you do the job and I think that's an exemplary kind of cooperation. I understand that the damages to the system are estimated to be in the hundreds of million dollars range or some place. How much will be covered by insurance and how much by the rate payers?

MR. PHILLIPS: Well, I think we don't have all the answers to that. PG&E does have insurance for our above-ground facility damage. It does have a \$25 million deductible. As you probably know, the Public Utilities Commission established on November 3, a holding account to collect the costs of the earthquake after that date and we, I think, will be meeting with them in the next few months to discuss what's been collected in that account and, of course, the balancing accounts in our current rate structure take care of any loss of service and that sort of thing.

CHAIRMAN ROSENTHAL: Now, could you tell us how you got the military to help you when the city was unable to do it.

MR. PHILLIPS: Yeah. I can tell you what I know.

CHAIRMAN ROSENTHAL: Okay.

MR. PHILLIPS: As far as I know, we only received assistance in two areas. One, the USS Lang provided steam at Potrero Power Plant to help us heat the feed water to get that station back on line. I'm not sure that we actually went to them. I think they heard of our problem and volunteered the USS Lang to provide that steam. In the other case, the Air Force flew in some large breakers that we were able to locate in TVA and they flew them into Moffit Field. I think that the coordination on the Air Force's assistance was done through the nation-wide network that we have on the electric side for identifying critical spare parts, transformers and that sort of thing. But I'm not exactly sure how that contact was made.

CHAIRMAN ROSENTHAL: Okay, maybe we'll pursue that some other time. As you know, Senator Roberti and some other members of the Senate have been expressing a concern and they expressed it immediately after the earthquake about the Diablo Canyon safety concerns. My biggest concern is that the independent safety committee is not up and running to confirm the safety of the plant. We've asked for an NRC investigation. Can you tell me what action that independent safety committee or NRC have taken to look into the impact of the quake on Diablo Canyon.

MR. PHILLIPS: I'm sorry, Senator, I don't have that information. We can certainly get it to you. I know that the plant was not affected. It does have safeguards in place to protect the plant in case of an emergency, such as an earthquake. And the G forces experienced at Diablo Canyon were well below anything that was set up as an automatic shutdown for the plant.

CHAIRMAN ROSENTHAL: Well, I'd appreciate it if you'd get back to us on that particular issue concerning the safety committee.

MR. PHILLIPS: Certainly.

CHAIRMAN ROSENTHAL: I'm concerned about the number of utility facilities and hardware that failed under the stress of the earthquake. And I believe that more R&D should be undertaken to strengthen that system and I'll be introducing a bill on this issue. Is PG&E committed to investing in R&D efforts that would reinforce your electric and gas systems?

MR. PHILLIPS: Yes, we are and we have, for several years, been looking at the seismic design of our facilities. We are doing research and development in both those areas. We currently have a multi million dollar replacement program for the type of equipment that failed on the electric side, the breakers and we're in a replacement mode on that and then I think, as you know, we have a two billion dollar pipe line replacement program to eliminate older cast iron and steel main from the system, that's a twenty-five year program.

CHAIRMAN ROSENTHAL: At this point I'd like to welcome Senator Morgan. Thank you for joining us. We're into the Energy and Water Utilities Panel, the first one, Mr. Phillips of PG&E. We heard Local Government already.

From your point of view, how well did the independent energy producers perform with regard to providing additional diversity and security for the system?

MR. PHILLIPS: It's my understanding that they responded very well, as they should, and allowed us to bring customers back on in a good manner.

CHAIRMAN ROSENTHAL: They are part of your plan, in terms of emergencies?

MR. PHILLIPS: I'm not sure that I'm the one to answer that. All of our generation resources are part of our emergency response plan and the independent power producers would be a part of that generation mix.

CHAIRMAN ROSENTHAL: I would be interested if you can get some information to the committee on that subject as to their role and how they performed it as part of the system.

MR. PHILLIPS. Certainly.

CHAIRMAN ROSENTHAL: All right, thank you very much. Next we'll go to Mr. Gary Lambeth, Manager of Operations of Southern California Gas Company. And before you begin, I'm seriously concerned that a major earthquake in southern California could have devastating impacts on the utility services so, as part of your testimony, I'd like Southern Cal and Edison, on their opportunity, to discuss what measures you've taken to prepare for such an event, and what new initiatives, if any, you will undertake as a result of the lessons learned by the San Francisco quake.

MR. GARY LAMBETH: Thank you, Senator Rosenthal, Senator Morgan. I'd like to take some time to explain a little bit how we got involved in the crisis of the San Francisco Bay earthquake. The role we

played in assisting with the restoration of gas service, the impact the experience had on our own emergency procedures and, as you had requested, some of the changes we are implementing to make our response system more effective. SoCalGas has had a mutual assistance agreement for over twenty years with PG&E and San Diego Gas and Electric and for about 14 years with Southwest Gas Company. The agreement allows each utility to request and/or provide assistance in restoring service to customers following a natural disaster or other emergency which overtakes the affected utilities.

Hearing of the earthquake on October the 17th, I was at work and heard about it and immediately we had been called by PG&E to monitor some of our transmission interties, just to take a look at the pressures to see if there was any damage to the transmission system. We also began to ship some of our large pressure control equipment to the northern divisions of Southern California Gas Company to be in a closer location if PG&E so needed. We alerted the operating divisions closest to the PG&E service territory that evening to plan their next day work so if they needed to, we could move into the area and we made a call to PG&E and talked to Virge Rose, the Senior Vice President up there and told him that we were standing by and if he needed us, we would be available. In keeping with the mutual assistance agreement, as well as the State Gas Emergency Plan, which is designed by OES, we did receive a call at 7:30 the next morning for assistance from Southern California Gas Company. Initially it was a request for 100 customer service people to provide help to restore service to those customers who were without gas, as well as for about 30 mechanics to do leak surveys in the downtown business district. They needed about 200 blocks of the downtown area surveyed to make sure that it was free of any gas leaks prior to restoring electric service to the downtown area. Those 30 mechanics were needed a little quicker than the service restoration crew so they were flown to San Francisco with their equipment and they worked for two days in surveying the services in the downtown area. For three days after the earthquake, we continued to provide additional people and finally the bottom line was we had 250 customer services people in the San Francisco Bay Area assisting, about 15 percent of our workforce, customer service workforce was sent to San Francisco to assist.

During the last 20 years, we've had two moderate earthquakes in southern California. We've had the 1971 Sylmar quake and we also had the 1987 Whittier Quake and both of those experiences provided us an opportunity to evaluate first hand the earthquake safety measures and our own emergency response

procedures. As a result, we have been refining those procedures on earthquakes as well as our emergency response. To a great extent, while observations and experiences in the Bay Area confirmed what we had already believed to be true, as far as earthquake safety measures and affect of seismic activity on natural gas pipeline systems, appliances and equipment, our service people, while working the San Francisco area found very few gas related leaks associated with the earthquake. Most of the damage was the result of unstrapped water heaters tipping over or damaged semi-rigid connectors, which are the aluminum or copper connector type, or homes that were not secured to their foundations which slid off and actually broke the service piping or fell on top of the meter assembly. Strapping water heaters and replacing semi rigid connectors with flexible ones and securing homes to their foundations are procedures that do work in providing seismic improvements.

We sponsored Senate Bill 1890 last year which was signed into law in 1989 and this bill requires all water heaters installed in California after 1991 to be strapped or anchored. We support these measures and are implementing a customer earthquake education program to instruct them on how to strap their water heaters. It can be done relatively cheaply just using plumbers tape and shelf brackets as well as some screws and nuts and bolts. We also have a program to replace semi rigid copper connectors free of charge on service calls. I think the point there is that the weak link in any residential structure is at the connection of the appliances. Whenever you have strong earth movement, you do have the movement of appliances and if you have stainless steel or brass corrugated flexible type connectors, those appliances can move and you don't have too much to worry about, but the semi-rigid connectors are the ones that have to be replaced.

The majority of the customers that closed the gas meter, as Steve had mentioned, they did so probably out of fear and unnecessarily due to lack of what information they have about what to do on emergencies and shutting off natural gas.

CHAIRMAN ROSENTHAL: Just on that subject.

MR. LAMBETH: Yes.

CHAIRMAN ROSENTHAL: Does the gas company provide notice to customers about turning off gas when and if, in terms of a disaster?

MR. LAMBETH: Yes, we do. In fact, I provided some handouts to Kim this morning that she can share with you. We have a new-occupant brochure called "Facts Book" that talks about the safety measures with natural gas. There is about a million customers in our service territory, about 25 percent of our customers that move every year, so on each turn-on, they receive a "Facts Book" that tells them about gas safety measures including how to shut your gas off and what to do in case of an earthquake or an emergency, how to locate your gas meter and how to close it. Once a year, usually associated with Earthquake Preparedness Month, about April, we do have a bill insert that also goes out with all of the customers bills on how to close your gas supply and when to close the gas and when not to. We do provide brochures and fliers at earthquake fairs. We do have speakers available that do make earthquake preparedness presentations. So since 1987, Senator, we have been taking an active role in providing earthquake communications, including bilingual communications to our customers.

CHAIRMAN ROSENTHAL: Just one further question on that education program, how does the customer find out about strapping the water heater, or how to strap it. Is there any information about that available?

MR. LAMBETH: There is information in the yellow pages of the telephone book that actually shows how to strap a water heater. There are generic information brochures out. What we did is we asked our engineering department to really come up what we felt was the simplest way a customer could do this, as well as the best way to make sure it was secured and we do have a brochure that we are in the process of developing, following SB 1890 so that we will be distributing it every time we make a customer call and we find an unstrapped water heater or any time we turn on the gas, so they will be getting those information pamphlets.

CHAIRMAN ROSENTHAL: Thank you.

SENATOR REBECCA MORGAN: Mr. Chairman.

CHAIRMAN ROSENTHAL: Senator Morgan, yes.

SENATOR MORGAN: I apologize. One of my cities called me this morning earlier for breakfast and I wasn't able to make the 9:00 and Mr. Phillips may have answered this question on the turning off of the gas. And that was the biggest confusion that I heard in the earthquake in my area, which includes Los Gatos and Stanford, as the two main areas that were hit by the earthquake. Of finding, after the fact,

that turning off the gas probably wasn't the right thing to have done because those who didn't, didn't seem to have a problem and continued to have heat and those who did, had to wait several hours to get it back on. I think all of us, I know, including myself, have always assumed that turning off the gas in an emergency was the right thing to do. Have you already gone over the educational process that's taking place to clarify this for people?

MR. PHILLIPS: Maybe briefly, maybe I could add a few comments to that. Just last week, the Public Utilities Commission sponsored a meeting in Los Angeles, So. Cal. San Diego all of the California gas utilities were there discussing this very issue and how can we better communicate with the public, educate the public on when to and when not to shut their gas off. We're working with an agency called BayRep, which I think is state sponsored, to try to communicate and coordinate with the media on getting better information to customers. In the phone book in the yellow pages, of course, are instructions on shutting off the gas service and one of the things we want to stress to people is that they should shut off their gas if they smell gas or if there is substantial damage to the facility. But if they don't smell gas, they shouldn't turn it off--it can be a very critical resource after an earthquake or emergency.

SENATOR MORGAN: That is new, because I went back and checked two earthquake preparedness brochures that I had in my files, both of which say turn it off and so I think it is important that we revise our educational messages.

MR. PHILLIPS: Definitely, yes.

SENATOR MORGAN: And should I say--I was just curious, Mr. Phillips, and this may not be a fair question, but as a PG&E customer, personally, I called and said how long will my electricity be off and was told 36 hours. I was very pleased to find it was on in 12 hours. I wonder if other customers were as well served?

MR. PHILLIPS: Well, I hope they were. We were able to get most of them on within 48 hours after the quake, so...

CHAIRMAN ROSENTHAL: When you called did you identify yourself as a Senator?

SENATOR MORGAN: No, but they know. It goes off regularly at my house, unfortunately. PG&E and Los Altos are still working on that.

SENATOR ROSENTHAL: Very good.

MR. LAMBETH: There's a couple of other things. We have the same concern too if there is a major earthquake in southern California as to what we can do and the one thing that--if we can't operate, Southern California Gas Company, we really can't serve our customers. So for the last couple of years, we've been implementing a number of items internally to help us respond better to the customers. We've added a cellular telephone system, cellular telephones, rather, to our numbers of the supervisors and on-call personnel. We've had about 2,400 mobile radios for a number of years but the use of cellular phones were so valuable in the San Francisco Bay quake, it was one of the lessons learned so we've added 160 since last November, October. We also had 1,200 pagers to improve the response of communications. Of course, being a public utility, we do have lineload control and priority restoral services with the telephone company, but by 1991 we will have our own microwave communication system fully looped and installed that will make us independent for some part of at least internal communications and tying into PG&E and San Diego Gas and Electric, where we can share our microwave towers.

Over the last three years, we've consolidated our geographical divisions. Our company is broken up into nine geographical divisions; it was reduced from 13. In doing so, we upgraded six brand new headquarters buildings and they're all built according to seismic code and we've also upgraded the remaining three. If one division headquarters goes out, we have the ability to reconfigure the telephone system and it will be directed to the other eight so we don't have all of our eggs in one basket. The same thing with our data processing centers. We do have redundancies. We have two centers and they're in different seismic zones so if one is taken out, we do have redundant systems. We have a backup generator at all of our facilities, as well as our corporate emergency response center, and so if we lose external power, we can operate there with a backup system. The business resumption plan is something that we learned also from the First Interstate fire in Southern California, that we need to have our own plans in case we lose our headquarters and our two thousand employees down there as to what alternate sites we can go to and still operate the critical business units. So we've taken and implemented in 1989 headquarters business resumption plan to do that backup type of planning.

And we've also provided emergency food, water, and medical supplies at, not only our headquarters, but all our division facilities to last at least 72 hours, which, a lot of times the earthquake planners say we may have to be on our own for awhile without emergency food or services, including

those things we take for granted. McDonald's may be out of service also. So in any case, these are some of the steps that we've taken to kind of prepare ourselves for a better response.

CHAIRMAN ROSENTHAL: Very good.

SENATOR MORGAN: One other question. Mr. Lambeth, I too, first of all, thank you for the people that you sent north into our area. Is that a general agreement between all of the utilities in California now, the mutual aid pact, or however...

MR. LAMBETH: The mutual assistance agreement that we have, we've had, like I say, for 20 years. It involves four utilities that we're involved with. PG&E, San Diego Gas and Electric, and Southwest Gas. Not all--there are some, CP National, some of the northern, that serve just portions of California that we do not have as part of that agreement.

SENATOR MORGAN: So what percentage of California would you say is covered by some kind of a mutual agreement?

MR. LAMBETH: All of it in Southern California; 95 percent of northern California.

SENATOR MORGAN: So it is just some of the rural areas in northern California that don't--aren't served by a utility in a mutual assistance agreement?

MR. PHILLIPS: That's correct. And having the mutual assistance agreement, of course, is a very good thing to have before the fact, but, as we found out in the October 17 quake, we asked for resources from Reno and Salt Lake and Portland and Seattle and they were very responsive in meeting our requests.

SENATOR MORGAN: And South Carolina.

MR. LAMBETH: Senator Morgan, I might also mention that the Office of Emergency Services has a utility coordinating group and they do provide coordination for utilities. There is a statewide utility plan and in that includes support and assistance from all utilities so we would certainly be available, I am sure, for the other five percent that we're not carrying.

SENATOR MORGAN: Thank you.

CHAIRMAN ROSENTHAL: Thank you very much. Next we will have Mr. Dennis Ostrom, who is the Engineering Consultant for Southern California Edison. Welcome.

MR. DENNIS K. OSTROM: Good morning, Chairman Rosenthal and other Members of the Committee. I'd like to start off just by outlining, I think, what, relative to the other utilities have spoken

earlier, our small involvement in the restoration of service and then go into our own emergency procedures a little bit.

We had contacted, or we were in contact with, the energy control center of PG&E within an hour after the earthquake. And further communication really didn't pick up until the next morning around 7:30 or 8:00 where we offered assistance in the area of personnel and materials. We didn't really get acceptance of our offers until about an hour later where we were requested to provide a circuit breaker and we could provide that so within the same day we had a large 500kv circuit breaker dispatched on one of our trucks along with a crew to help install it and make sure that operating procedures on that particular circuit breaker were complied with. They were back within three days and that was basically the extent of our involvement in recovery procedure.

There was one other involvement we had which was we sent up our technical personnel soon after the earthquake and reviewed the damage. This turned out to be a very valuable tool that we've discussed it with the technical people of PG&E in that their personnel are so wrapped up in their restoration efforts that they can't go in and really interpret what actually occurred. What were the failure mechanisms? And Southern California Edison and the Department of Water and Power were very actively involved in this. And we're continuing on in the, I'd say, the debriefing exercises of what actually occurred from a mechanistic or a technical standpoint involving the failures in this particular earthquake.

Crisis is a learning experience and Southern California Edison is taking every advantage of this particular crisis. Pacific Gas and Electric is, too. I know that because we're all in this together. We've had a lot of meetings and we've confirmed, basically, a lot of things that we found out earlier in earlier earthquakes in the last decade: the 1986 North Palm Springs earthquake, and the recent Whittier earthquake, and even as far back as the '71 San Fernando earthquake. Some of this equipment does date back to that time. Our current emergency procedures at Edison, of course, incorporate these past experiences and it's really too early to say right now how much impact this recent experience is going to have on our current emergency procedures.

Our current emergency procedures, they do address, as we found out it's very important, communication within Edison, access to key Edison personnel. It's not even--it's not so much , or it's as important to get in touch and also to get physically ahold of people--these are two very important things.

Key society, key elements of society outside of the Edison Company are also addressed in our emergency procedures--the City Managers, Energy, or Emergency Control Centers and such.

We also address functional stability. We have resources within our system where we can fall back to different energy control centers and, failing that, we can break up into subsystem control centers and maintain local stability.

The experience that PG&E has had recently may have an impact on our emergency procedures, like I said, it's much too early to say right now. Studies will probably go on in the detail that they're going on right now, I foresee the next year and a half or two years. We just won't know until then.

CHAIRMAN ROSENTHAL: Thank you very much. Let me just ask both Southern Cal and Edison, in LA County we have, of course, about 85 cities--incorporated cities. What sorts of arrangements do you have with those local governments in times of emergency. And how does that--and how is that being changed as a result of what you saw in northern California, perhaps?

MR. LAMBETH: With the larger cities and counties, LA City and LA County, we have assigned liaisons, not only assigned liaisons, but backups also to those cities. With the geographical divisions that I'd mentioned to you, the 9 service divisions, they have the responsibility of dealing with the smaller cities in that area and be available to their EOC's when requested. Some cities have some very nice emergency operations centers and we do have places assigned in the EOC's with our own telephone and our own radio. So, City of Los Angeles has that, City of Pasadena has that, but some of the other smaller cities do not have sophisticated EOCs and have not invited us in, but we certainly stand ready to do that.

CHAIRMAN ROSENTHAL: Okay, do you have any...

MR. OSTROM: That's really out of my area of expertise.

CHAIRMAN ROSENTHAL: Okay, fine. We'll next go to Jim Leahy, representing the Independent Energy Producers Association and the California Cogeneration Council. Before the next three gentlemen, let me just--I'm--and maybe you can touch upon it in your presentation. I'm concerned about the interrelationship among energy, water, communications and transportation utilities. For example, the water, and communication and transportation services fail because of loss of power. Or energy utility services could be hampered due to a failed communication system. So to what extent are the various utility industries coordinating their activities to provide mutual support in case of emergencies?

Mr. Leahy, since you're the next one to speak, you might want to comment about some of those other things in conjunction with your presentation.

MR. JIM LEAHY: All right, Senator, thank you, good morning, members of the panel. I think we've heard some cases of extraordinary performance on the part of state and local governments this morning and will probably continue to do so. In fact, I owe a personal debt to Caltrans. I took five dollars off my boss on a bet as to how long it would take to put the Bay Bridge back in service. So, one of the reasons I'm pleased to be here is to express the personal gratitude and admiration of the group I represent, the independent generators.

It's also gratifying to report that our organization--members of our organization made contributions to recovery from the earthquake. We worked in close partnership with PG&E to help overcome disruptions to the electric system and the customers caused by the earthquake. Eleven of our generators are scattered throughout a radius of 60 miles or so from the epicenter of the earthquake. They're located in such places as Santa Cruz, San Jose, Gilroy, King City, San Francisco, Stanford. They represent an aggregate capacity of 350 megawatts. 280 of the 300 megawatts that were on line at the time of the quake either continued to operate, or were back on line within a very short time--generally within the two hours they were tripped, largely due to system transients at the time of the earthquake. The balance of the capacity came back on line within the next two days. None of those facilities suffered any notable damage. They tend to be relatively new facilities, as you know, the program largely having been launched in the early '80's.

I've cited these of the figures, because they illustrate a point. The state of California, for about the last decade has been fostering a policy of creating technically and geographically diverse generating resources within its electrical systems. The theoretical benefits of such policy include the decreased likelihood of losing large blocks of generation to a single event, and increasing the system resilience, the electrical transmission system resilience, that results from dispersing generating resources throughout the area served. Those that I represent today are the ones who took the risks and invested the resources to allow us to test those theories and this appears to be the first case where the promise of these benefits was actually realized in real life.

It's probably clear to you that we're proud of our performance during and after the earthquake but to put all this in perspective, our members simply worked to fulfill their roles as quality suppliers of electrical energy to PG&E. It was, of course, the utilities that had the nearly overwhelming task of restoring service. And to that end, coordination and communication between PG&E and our various facilities was quite good. Nearly all the independent generators in the area operated under frequent and extensive special instructions from PG&E during this period. We did experience the same kinds of difficulties that you've heard about this morning--overloaded but not failed communications. The facility for coordinating independent generators with the utility systems contained in each of our Power Purchase Agreements, the contract that we have with our respective utilities to sell power, our members and utilities conducted normal day-to-day operating coordination through local PG&E switching centers and though at a much higher level of intensity during the emergency, the basic mechanism served reasonably well.

Did the system work? I think by nearly any measure, we believe you'd have to conclude that it did work. Could the partnership between Independent Generators and the utilities be improved in its ability to respond to widespread emergencies? There's no doubt that it could. There's much to gain from the experience, this recent experience, which we obtained at dear price and we're beginning to take steps to share the lessons that we've each learned. Specifically, Dick Clarke has given Greg Rivers' office the responsibility of working with our groups to share those lessons--make sure that we don't lose anything from that experience. There's always room to improve things like coordination and communication and planning for the hundreds of things that didn't happen this time and our members are committed to working with utilities to help assure that both of us are better prepared for the possibilities of future emergencies.

In closing, I believe this experience forcefully portrays the inherent value in the state's policy of encouraging decentralized generating facilities and we're confident that applying our newly acquired experience will enhance that value. Thank you.

CHAIRMAN ROSENTHAL: Thank you very much. Any questions? Next Don Houck, President of California Water Association and Chief Operating Officer of the California Water Service Company. Welcome.

MR. DONALD HOUCK: Thank you, Senator. Maybe at first, I'll just give you a little background on the investor-owned water utilities in the state since I keep finding that most people really don't know much about us, much less that we even exist. California Water Service Company is not only the largest investor-owned water utility in the state, it probably ranks about second or third in the country in size. We serve 350 thousand service connections with about probably 1.3 million population. On top of that, we're a member of the California Water Association which members have 65 utilities out of approximately 260 utilities regulated by the California Commission. But those 65 represent probably 98 percent of the service. So when you're looking at water utilities, you're probably looking at different animals. Even us, when you compare us with the gentlemen to my left here, we are much smaller. We don't quite have the profits that they do.

Back in our company now, five of our systems--we have 21 operating systems, five of them are located on the San Francisco peninsula. They serve about 83 thousand customers, probably a population of around 300,000. We also, in the range of the earthquake, have water systems in Salinas, Livermore and Stockton that serve another 75,000 customers, probably a population of another quarter of a million. So we were significantly involved in the October 17th quake. How did we do? In a couple of words, we did very good. Our response, or disaster plan, calls for a few people to report back to the office immediately when something like this occurs. Although everybody--practically everybody had gone home, within an hour we had almost all our field people back in the office, some office people and we were out repairing leaks and looking for them. As far as the affect on service, the only people, basically, we had out of water were in our Los Altos system. We had approximately 900 people out of service for some 30 hours. There we had another 60 people out for some 19 hours and probably another 240 or 50 people customers out from 3 to 7 hours. The damage that we had systemwide was we had 48 main breaks and we had about 26 tanks out of service. Luckily only two of the tanks--when I say out of service, I should say damaged. Only two of the tanks were really taken out of service during the quake and those were both in the Los Altos Hills which lead to some of the problems that we had that caused us to be out of water.

CHAIRMAN ROSENTHAL: Was that a lack of power to...

MR. HOUCK: That was a good part of the problem. I was going to cover that. Yes, it was our most serious problem, I think.

SENATOR MORGAN: That depends on whether you were the house right below the tank that split open a hundred yards from my house.

MR. HOUCK: You must live over in Purisima Hills...

SENATOR MORGAN: Very close.

MR. HOUCK: Now I understand...

SENATOR MORGAN: That wasn't the power, that was the water tank split wide open and flooded the hillsides.

MR. HOUCK: Yes, it did.

CHAIRMAN ROSENTHAL: Well, I'm not sure. I don't know how they can prevent something like that from happening, but what happens if, in fact, because you don't have electricity, you don't have power, you can't pump the water back into the tank? You know, how do you resolve that problem?

MR. HOUCK: Well, we have in all of our systems...

CHAIRMAN ROSENTHAL: You have a stand-by system?

MR. HOUCK: We have auxiliary motors and generators that we use. The problem in the Los Altos was that we lost two tanks. We also lost or greatly reduced a surface supply that we purchased from the Santa Clara Valley Water District, that was reduced substantially and so we weren't quite equipped enough to overcome over a 30 hour power outage in some areas and also the loss of a couple of key tanks and some of our supply. We weren't quite equipped to do that.

But on the other hand, take Salinas, for example. We were out of power down there, the whole town, I understand, for about 30 hours. We, with our backup power there, managed to keep not only our system in the water the whole time, but we made some emergency connections to a couple of other small systems and were able to keep them in water. So Salinas did very well in that regard.

SENATOR MORGAN: Could I ask Mr. Houck a question on loss of tanks.

CHAIRMAN ROSENTHAL: Yes, sure.

SENATOR MORGAN: In the placement of your water tanks, who does, or in your view, who should bear the responsibility for the placement of those tanks as it relates to surrounding homes or businesses?

MR. HOUCK: Well, I would say that you're going to find, particularly in the hill area, that probably our tanks were there first. We set the tanks up on the hill and you know how the Los Altos Hills, for

example, has developed over the last fifteen years or so. I seriously doubt we could build a new tank up there. We might have a heck of a time getting a location and getting all the permits. But we've been there for some time.

SENATOR MORGAN: So you're saying it's like airports and anything else, you were there first and the City Council's allowed, in their zoning, allowed houses to go in around them.

MR. HOUCK: And also I might point out that without tanks, you might not have a development, because we need the tanks to provide the water, particularly the fire protection service that we require. You know, we're required to have so many hours of fire protection service in case of a power outage, for example. And if you don't have the tanks, you don't have that type of service.

SENATOR MORGAN: Who bears the liability in cases like that where your tanks break?

MR. HOUCK: As far as the cost?

SENATOR MORGAN: As far as the damage to the surrounding homes or businesses.

MR. HOUCK: In the case of a quake, you know, if it's a--we've had, you know, tanks overflow in the past and we have had to pick up the damage. In the case of a quake, though, I'm not sure. I don't believe we're responsible for that. It's earthquake damage, is what it would amount to.

SENATOR MORGAN: And so the homeowners or the businesses either have to get help through governmental entities, or their own earthquake insurance, or their own pocket?

MR. HOUCK: That would be my understanding.

SENATOR MORGAN: So the water companies do not see it as their responsibility?

MR. HOUCK: Not in the case of an earthquake. We, for example, we don't have earthquake insurance. It's something that, you know, we just feel that we couldn't afford, even for our system. So, we're spending approximately \$260 thousand for all of our systems. Most of the money--over half the money in Los Altos for main repairs and tank repairs. The Public Utilities Commission on November 22 issued a resolution that allowed us to recover expenses incurred after that date. Unfortunately most of the expenses were incurred before that date and unless we can convince the Commission otherwise, it's going to come out of our pockets.

One other area I might touch on, and you've talked about what problems we had and what we're doing to correct them, I believe that it's the same as you've heard before. It's basically we didn't have

enough auxiliary power in our Los Altos district. One of the things we found was that on the San Francisco peninsula, there didn't seem to be any general coordination between utilities, police, fire, that type of thing. There didn't seem to be any center, EOC, I believe, is the term, at least that we were aware of. So we were finding out about leaks from calls from our customers and I think we probably had a little bit of delay getting power back into some of our pump stations. PG&E, probably rightfully so, didn't give a high priority to a residential, strictly residential area in Los Altos Hills, but that's where our booster pumps are. And we need those pumps to provide the water service. So we have been talking with PG&E and we're providing them locations and doing that.

We also had some problems with our communications with our districts--the phone lines being out. One of the things we've done is we're now installing some portable generators in all our offices to keep the phone lines up, to keep our monitoring equipment up, to get some lights, that type of thing. We're also investigating the cellular phone aspect. We understand they were up when the phones were down. And so we're probably going to install cellular phones in all our districts. So we did learn a few things, particularly in the communications area, and we are moving along on that.

CHAIRMAN ROSENTHAL: Okay, thank you very much.

SENATOR MORGAN: I have one other question? Did you get any help out of the County Emergency Service Office?

MR. HOUCK: I don't believe so. We really were able to handle our problems ourselves within our company. In fact, we brought in some portable generators from as far away as our Bakersfield and Visalia system when we found--finally found out that the power wasn't going to be restored as quickly as we thought it was. So we felt that we had, with our own crews and the construction company that does a lot of our maintenance work--their crews were out there and we were able to handle everything that needed to be done.

SENATOR MORGAN: I asked that question because of your comment about the lack of coordination between some of the entities in that area, in the county. I know it has very few staff members in the Emergency Service Office, but the area where your tanks are, are also served by the County Sheriff's Department. So I was trying to get a handle on where things were in your opinion things broke down there.

MR. HOUCK: Well, I don't think—from what I understand, people just didn't—we weren't aware of where they were. They probably weren't aware of where we were and we never got together.

CHAIRMAN ROSENTHAL: Okay. Thank you. We'll hear from Mr. Paul Schreiber who is Vice President of Operations, San Jose Water Company.

MR. PAUL SCHREIBER: Thank you, Senator, and good morning. My comments, this morning will be directed into three areas. First is the magnitude of the problem within our distribution system. Second, the actions that worked favorable for us during this crisis. And lastly what we learned and can improve upon to be better prepared for the next time.

In the five days following the quake, we had 91 main breaks reported in our distribution system. These breaks ranged in size from four inch mains clear up to 37 inch water mains. And the majority of these were out in the Los Gatos area of our system. We had seven storage sites damaged. These ranged from a 10,000 gallon redwood tank that was totally knocked off its foundation, to a 100,000 gallons bolted steel tank that actually ruptured at the seams to a 10 million gallon concrete lined reservoir that was cracked. Our most serious damage was to our storage sites in the Santa Cruz Mountains and the Austrian Dam forms Lake Elsmann which is a 2 billion gallon surface water reservoir for us where we impound water, bring it down and filter it. And this particular site suffered extreme cracking and so on, and I'm happy to say that it's about 92 percent completed right now and we're able to fill up. But this particular site, we estimate is going to cost us about \$1.5 million to repair, where our total expenses from the entire earthquake activity, we estimated about \$2 million. So a big piece of the action was our Austrian Dam problem.

In the area of actions that worked favorably for us, the first one was our radio communications. In our system, we have two primary channels and two backup channels. So we have protected ourselves in that area because that's a vital link to us operating.

The second aspect was our telephone circuit operation which was a tremendous help because our system being as large as it is, we must communicate with our stations over the phone wires. And this was up and it was tremendous to have this at our disposal.

Our manpower response was tremendous and I think part of this was the timing of the quake. At 5:04 p.m., people were either on their way home or just got home and the two important things in their

life is, is my family okay and is my house still all right. Then, once they were assured of that, they came back to work.

We have a disaster plan and our disaster plan worked extremely well for one simple reason. You must practice it. You practice it during the year. You create scenarios and you go over and over and we have done this and we were very proud, I was very proud of my staff at the way things worked.

The last item is the local mutual aid was extremely helpful to us. And one reason was in our particular system, we have local contractors that install new water mains in our system. And these people know our system, they have our radios in their trucks, so they were able to supplement our crews both in equipment and manpower. And this really aided in the repair of leaks. In fact in the first 48 hours we repaired 36 main breaks in our system.

Things that we learned or can improve upon: One area that concerns us again is manpower, especially if the quake happened during normal working hours. Everybody is going to want to run home and check on the family and the house and we're thinking very seriously of having some kind of a group of people that would try to communicate with the workers' families to find out if they're okay, the house is okay and also let them know that the husband or wife who is at work is okay.

One important aspect that we felt we needed a lot more information on was the internal operations of hospitals. How do they handle the water inside the building after they get it from us. And this was something we felt we needed a lot more information on and we have checked with all the hospitals already within our service area, whether or not they have tanks, boosters, etc., within the hospital because that is vital in a major catastrophe.

The other aspect is something you must have is a post quake evaluation team ready to go with either engineers or operations people to go out and look immediately about the system.

Driving: When you have power failures in a major artery and the street lights don't work, it's sure nice to have alternative routes. If you have to drive during the quake, that you have a way of getting to a site without going down the main streets when there is no power. I sure found this out, myself. If you know the back roads, it pays off.

Stand-by power, and this has been talked of quite a bit so far. In our particular system, we don't have a lot of stand-by power because we have over 80 reservoir sites in our system. Just because the

power goes off and we can't pump, if there's water in the tank, people are going to have water. It's just if you had those major breeches of water mains or a tank that's split, then you're going to lose it. We are looking in our system into having generation systems on trailers that we can move around from site to site, versus putting a lot of money in a site where you build in a permanent stand-by facility and then you can't use it anyhow because the major mains are down, until they're repaired.

Complacency: and this is something that was alluded to with the main breaks they had in San Francisco, you know, weeks after the problem, but just because your facility went through a 7.1 magnitude quake, you can't fall asleep and forget to check your facilities because the aftershocks are only 5.5. You could have the biggest thing waiting to blow in your face because of stress, et cetera. That you must continually check your system.

As a summary, our system was 100 percent operational 60 hours following the quake, meaning we had water flowing to everybody in the Los Gatos-Saratoga area. And the last item is, as I say we are in the process now of accumulating all of our cost data and forwarding this information to the PUC. Thank you.

CHAIRMAN ROSENTHAL: Thank you very much, panelists. We will now ask you to vacate those chairs and we will hear next from the Telecommunications Panel, Michael Caren, Charles Mayfield, Michele Pereira, Jim Dixon, Mel Kemp, Jim Butler, J. Bowmar Rodgers.

Michael Caren, Division Manager of the Emergency Preparedness for Pacific Telesis.

MR. MICHAEL CAREN: Good morning, Senators and Panel.

CHAIRMAN ROSENTHAL: For those of you who weren't here at the beginning, please do not read your statement. I'm going to call time at the end of about 10 minutes. See if you can tell us the high points in that period of time.

MR. CAREN: Good morning. A little bit about what I'm responsible for. I'm accountable for the emergency preparedness planning statewide for Pacific Bell--emphasis on planning. The implementation takes place out in our field, particularly in our emergency operating center structure. However, I was a part of that structure and in the emergency operating center during the recovery part of the event. I'm going to cover three areas, the impact on Pacific Bell and the customer affect and they are so intricately tied that it's pretty difficult to separate one from the other. And then I'll move into the immediate

response which you asked some comment about, and then, finally, describe the overall emergency preparedness program in Pacific Bell.

First of all, on the impact, I'd like to summarize it by saying we feel that we bent, but we didn't break. As far as the personnel side, we had no earthquake response related deaths nor injuries. There were two deaths, not in Pacific Bell, but in Pacific Telesis, however, they were not connected with the response activity. On the equipment side, we have two major categories, the switching and then the outside plant. On the switching side we had no significant widespread damage. We did have toll equipment damage in our Oakland/Franklin wire center and some minor damage throughout several of our San Francisco wire centers, minor damages such as broken jumper wires, circuit breakers--damaged or loosened--cables that broke loose from their anchoring. On the outside plant side, there was no major feeder or distribution damage, neither in the fiber system nor in the copper system. We did have service wire, or in layman's terms, drop wire damage, out in the Marina in the area of the fire. As far as the structural damage to our facilities, we had nine buildings that were damaged, none of those were declared uninhabitable. We had one switching center which incurred significant damage and that was over in Oakland, that was our 1587 Franklin location. Interesting about that facility, it was previously seismically studied by an outside consultant, recommendations had been made for reinforcement, seismic enhancement, work that was scheduled to start the Monday after the earthquake, so we missed it by a few days. One administration location in Oakland, as well, was significantly damaged, however again it was not declared uninhabitable by the city nor our own structural engineering reviews. The last area of impact was on the network and it's been alluded to by previous testimony. Our major problem became one of the huge call volume impact on the network due to the overloading, again, due to customer calling. Call volumes and overloads were the largest ever experienced in the history of Pacific Bell and we were told by many of the inter exchange carriers, the similar occurrence in their part of the telecommunications network.

CHAIRMAN ROSENTHAL: Let me ask a question. You know, the system worked but people couldn't get through. How do you relate to that?

MR. CAREN: Our strategy, as far as controlling--let me just describe what really happened the night of the event. The earthquake occurred at 5:04. At 5:05 our network management center in San

Ramon, in conjunction with a network management center in Sherman Oaks in Los Angeles, were in touch with the major carriers, and, in particular, AT&T's network management center structure and MCI and later on we involved Sprint. And there, through a system of controls, we were blocking traffic into the area and that was by designed strategy. And the reason for doing that was to create as much opportunity within the local, or the impacted area, for telephone usage.

We heard people say earlier that the phone system didn't work. That's not quite true, it did work. Dial tone became a real problem because the demand for the facility so we, by strategy, tried to make that facility available to the impacted area, particularly the public agency usage of it, the 911, et cetera. So our strategy is to block out as much traffic as we can.

CHAIRMAN ROSENTHAL: Is there a need for telephone customers to better understand how the system doesn't work, or does work in the case of emergency? In other words, people have a perception that the telephone is there to work. When something happens, nobody has told them that under certain circumstances, it may not work. Is it unreasonable to think about the possibility of some sort of a backup system to make sure that more people can use the telephone system under such an emergency?

MR. CAREN: Yes, it is reasonable. It's not unreasonable. It's reasonable to consider that and I would like to address that back in our overall program because I believe Pacific is addressing that.

CHAIRMAN ROSENTHAL: Okay.

MR. CAREN: So anyway our problem became one really of just managing the traffic and to make a very long story short, that it was very abnormally high. Normally our busiest part of the week is Monday and that's somewhere in the area of 55 million call attempts that are made on our network. The evening of the 17th, between the hours of 5:00 p.m. to midnight, we experienced a 20 million call attempt and the following day it was as high as 80 million. That's Pacific Bell. The carriers have their own figures which would point out a similar story. By Wednesday evening, through the control process and through the facilities being made available to the telephone user, traffic dropped back down to the normal levels and the engineered capacity could handle them. So we had a 24 hour period of time when we had extraordinarily high usage.

As for the immediate response to the earthquake, we do have preparedness planning that calls for the immediate activation of our emergency operating center and the emergency operating teams. That

occurred with the Bay Area team and north area team, which is located in Sacramento. Those went immediately into activation, initial damage assessments began. We had initial information in between 7:30 and 8:00 p.m. that evening of the 17th and of course we were testing our backup communication systems so that we could communicate one with another. We established active liaisons with the state Office of Emergency Services, Bellcore, critical private industry, such as PG&E and the media. We relocated senior leadership from San Francisco to San Ramon headquarters. We immediately contacted the inter exchange carriers, as I alluded to earlier and began mutual management of the network overload. Through the emergency operating center structure, we began assessing damage in the greater Bay Area. We inventoried personnel requirements for response activity and started notification processes. We also established priorities for response and that continued through the following day and then we deactivated the structure Friday at 10:19.

As far as the overall preparedness plan in the company, what I've described for you that occurred in the Bay Area as far as the liaisons, the mutual management of traffic, and the other related response, is a mirror image of the other four, or the other three of our emergency operating center locations. Those are Sherman Oaks for the LA area, Tustin for Orange County south to the border, and our north area is located in Sacramento.

Five particular areas that we address in our preparedness program involve the administrative side, the structural and equipment enhancement programs, communications facilities and leadership. And very quickly, on administrative, we do have a well defined emergency management organization, an EOC structure throughout California. We have quarterly disaster exercises that are considered functional and that's just one step below a full scale. Interestingly enough, we had simulated a 7.5 earthquake for exercise in the Bay Area EOC in early August and many of the problems that we built into that simulation were the ones that we were actually experiencing when the real event occurred. I know it was about 3 a.m. in the morning, one of the team members came up to me and said Carin, I really don't know this is the real thing, but one of your blankety-blank drills. Tustin is scheduled for their exercise March first this year. LA would be in August--or, I'm sorry, the North goes next in May and then LA in August and then we'll finish up in the Bay, again, in November. We work in concert with the Office of Emergency Services relative to the design and the participation and they're as intricately involved in our drills as our own personnel.

On the structural and equipment side, we've had two major programs underway, really since the earthquake down in Whittier, which, as you know, was a lot less severe in magnitude. If I recall correctly, it was about 5.9 on the Richter and because of our learnings there, we immediately launched into a seismic survey of our critical buildings and this is done by outside consultants. They make recommendations to us and we've been on a program to implement those recommendations. We also have evolved to an augmented anchor-bolting and bracing program for equipment in those structures. I don't want anybody to be misled by that statement. We've always anchor-bolted and braced, that's been part of our installation of our switching equipment and our computer equipment, but because of our learnings out of Whittier, we have gone into an augmented program meaning stronger and longer anchor-bolting and more complete bracing of the equipment.

CHAIRMAN ROSENTHAL: In L.A. as well?

MR. CAREN: In L.A.--that's where we started, Senator. Yes. As a matter of fact, their critical office, as identified in Los Angeles, have been completed. We build the structure to the Zone Four building codes, wherever Zone Four has been, you know, declared on the map. We'll build structures to Zone Three, if we're in a Zone Three, if that's what the building codes call for. However, because of Whittier and our learnings down there, the bracing and the bolting is all to Zone Four. Whether or not the equipment in the building, the building is located in Zone Three or Zone Four or Zone Two, we just brace to that highest level of damage vulnerability.

Our third area is in communications and we're presently installing in Pacific Bell an extensive radio backup system. As we know, the public switch network does get impacted because of huge call volumes and we need a backup system and obviously recommend that for every other industry or public agency. But we're in the process of deploying a telephone maintenance response system now which involves 450 megahertz and 800 metahertz frequencies that will tie the complete structure together in California. And that is tied to the State Office of Emergency Services and to Bellcore.

CHAIRMAN ROSENTHAL: Is cellular a backup option?

MR. CAREN: Yes, it is. As a matter of fact, we deployed cellular for our own use during the 17th and 18th, the recovery process. As a matter of fact, it worked extremely well.

SENATOR MORGAN: And made it available to cities and jurisdictions.

MR. CAREN: Yes, we did.

CHAIRMAN ROSENTHAL: Would you begin to wind up, please.

MR. CAREN: Yes, facilities and we have various redundancy and diversity programs that we had earlier where an example of that is the fiber rings that we are now deploying and building in the major metropolitan areas. It gives us a great deal more redundancy than we've had previously.

As far as the leadership, I leave that to the last because it's probably the most important of all. We just had tremendous commitment in Pacific Telesis and Bell from our top leadership, Sam Ginn, Phil Quigley and Marty Kaplan makes my job go a heck of a lot more easily when I have to try to get folks out in the field to accept this type of plan.

CHAIRMAN ROSENTHAL: All right. Let me ask the question again. How do we educate the subscribers concerning the telephone use or not use during emergencies?

MR. CAREN: Probably our best educational device or medium is the white pages informational section. We also have...

CHAIRMAN ROSENTHAL: Nobody reads it.

MR. CAREN: May I recommend, Senator, that you take some time to read it. I'm not trying to be flip. There's excellent information.

CHAIRMAN ROSENTHAL: No, I'm aware of that excellent information, but I'm also aware that most people never look at it. It may be that at some point in your inserts, you might encourage people to read the information in the front of the telephone book. For all kinds of emergencies that they could learn something about, but you have to remind them that it's there.

MR. CAREN: Well taken. And we have that recommendation under active consideration at the moment, Senator.

CHAIRMAN ROSENTHAL: Let me ask you another question because we're hearing reports about fiber optics.

MR. CAREN: Yes, sir.

CHAIRMAN ROSENTHAL: And there is a suggestion that there will be fiber optics into every home. In case of a power outage, where are you?

MR. CAREN: Well, first of all, I don't think Pacific Bell has made a policy decision as far as providing fiber to the home. They may have...

CHAIRMAN ROSENTHAL: Okay, I'll ask the others...

MR. CAREN: Well, let me comment on what I do know about that, though, however, because it is under active review in our engineering department, primarily because of the experience in South Carolina and Hugo. For instance, Southern Bell deployed portable generators out to their sites in order to provide backup power because of the loss of commercial power. That probably would be our first line of defense. Let's say if we had fiber to the home today, that would be our first line of defense. There are other alternatives, including such things as solar energy that is being evaluated and where all that stands in our network engineering studies I'm not sure.

CHAIRMAN ROSENTHAL: Okay. Maybe the others can respond to it as well. Let me call next upon Michele Pereira, who is the Emergency Preparedness Administrator for GTE California.

MS. MICHELE PEREIRA: Good morning. General Telephone is serving a portion of the area of the earthquake that is much smaller than Pacific Bell. In the immediate earthquake area, we had six central offices that were affected. Of those, three required--lost commercial power and required backup power which was available. And only one central office really sustained any damage that affected service. It received some damage to the switch that reduced the call processing abilities and provided limited service and it was sporadic for a five and a half hour period, at which time the normal service capabilities were restored.

Like all the other telecommunications companies, the biggest problem was the overload to the network--the massive call volumes in short periods. We responded quickly to the crisis. We do have remote monitoring of the central offices so we knew there was something wrong, obviously. We dispatched people, network services people from the Santa Barbara area immediately. Technicians and management people to speed up the restoration process and we sent, as far as our outside plant forces, we sent technicians and trained people in groups of two out into the serving area to detect problems, downed cables, broken poles, etc., prior to the customers calling in so we could get the repairs started. Our damages were minimal, fortunately. Our response was good. Our employees were back on the job and working and were able to be back up with full service capabilities on commercial power, not backup power, by the 19th.

CHAIRMAN ROSENTHAL: How did the 911 system work?

MS. PEREIRA: I don't know.

CHAIRMAN ROSENTHAL: Was there any coordination between GTE and 911?

MS. PEREIRA: I don't know.

CHAIRMAN ROSENTHAL: Perhaps you can get us that information.

MS. PEREIRA: I'll be glad to.

CHAIRMAN ROSENTHAL: Tell me about the Cerritos situation.

MS. PEREIRA: I'm sorry.

CHAIRMAN ROSENTHAL: If an earthquake happened in Cerritos, where you have fiber optics, okay, what would have happened to the telephone system?

MS. PEREIRA: I personally don't know, but I do have an expert with me that would be happy to respond to that question.

CHAIRMAN ROSENTHAL: Okay, may we hear...

MS. PEREIRA: Fred Fleming is his name.

CHAIRMAN ROSENTHAL: Mr. Fleming?

MR. FRED FLEMING: I'm Fred Fleming from GTE. At the present time we have forty customers on line in Cerritos and what would happen if we lost power, the only thing that would go out is the ringing of the phone. The phone would still work. However, we do have backup batteries.

CHAIRMAN ROSENTHAL: The phone would work, but the ringing wouldn't.

MR. FLEMING: That's correct. You just need. .

CHAIRMAN ROSENTHAL: Tell me.

MR. FLEMING: Okay, the phone is working on a laser. There's no electricity at all. You're talking over light. At the house, in order for the phone to ring, you can't make the phone--you need so much voltage to make the phone ring--electricity. So what we do, we plug into the house, 110, if that goes out we have backup batteries that will last for 72 hours. And it's already happened. In fact, an electrical contractor broke one of the lines in someone's house and the phone did work 72 hours because we tested it to see what would happen.

CHAIRMAN ROSENTHAL: Okay. Are you suggesting, then, in the use of fiber optics into the home, that there is the backup necessary?

MR. FLEMING: Yes.

CHAIRMAN ROSENTHAL: Should it be guaranteed?

MR. FLEMING: Yes, it should be guaranteed. Right now we're working on alarms. Say the power does go out and the customer doesn't know about it. We're working right on an alarm that will notify us to go out and change the batteries. But we feel at this time 72 hours is sufficient. If someone lost the 110 going to their house...

CHAIRMAN ROSENTHAL: So there is a connection to power. You see, the point I'm trying to get to is that if it doesn't ring, how do you know there's anybody on the line?

MR. FLEMING: Oh, I see what you mean. Well usually if you lost a 110 volts in your house, your toaster wouldn't work or something like that so you'd know if you didn't have power.

CHAIRMAN ROSENTHAL: That's right. But then you wouldn't have telephone service.

MR. FLEMING: But, as soon as you get your 110 back—you'd still have telephone service. You know, you could pick up the phone and make a call and it would still ring for 72 hours.

CHAIRMAN ROSENTHAL: Wait, you'd get the buzz when you pick up the phone to call out?

MR. FLEMING: That's correct, you'd still get dial tone.

CHAIRMAN ROSENTHAL: Dial tone?

MR. FLEMING: That's correct.

CHAIRMAN ROSENTHAL: Did you want to comment?

MR. RAY GONCZY: Ray Gonczy with GTE California. I just wanted to make it, perhaps, a little bit clearer. The phone would ring because it has 72 hour backup power. So if the commercial power did go out, the phone would ring.

CHAIRMAN ROSENTHAL: Okay, thank you.

MR. FLEMING: I probably didn't make that clear, I'm sorry.

CHAIRMAN ROSENTHAL: Okay, thank you very much. Ms. Pereira, do you have anything further?

MS. PEREIRA: The only thing in addressing your comments on notifying the public as to the proper use, because that is the big problem and yes, like Pac Bell, we have it in the front of the yellow pages. We also have a booklet that we distribute as a public service at school fairs, any type of public function or emergency fair that we have and in that booklet it does also provide instructions to aid in the education of the public.

CHAIRMAN ROSENTHAL: But the public didn't seem to know.

MS. PEREIRA: No, they didn't.

CHAIRMAN ROSENTHAL: It seems to me that you ought to give some thought--the telephone companies ought to give some thought to once a year or some period of time, the insert would remind people in case of emergency, or before the emergency, to at least read the information that's available for them so they'll know how to respond and how the 911 system works, when to use it, when not to use it, those kinds of things, as part of an ongoing educational process would keep more people informed about what they should or shouldn't do in terms of an emergency.

SENATOR MORGAN: Mr. Chairman?

CHAIRMAN ROSENTHAL: Yes.

SENATOR MORGAN: I'm not sure I understand what you're saying, what didn't the public know. I'm not sure I know what you're referring to.

CHAIRMAN ROSENTHAL: They didn't know, for example, that in an emergency, they may not be able to get through. They may not know, for example, that perhaps, because of the number of people who are going to use the telephone, that unless they had something that was of a serious nature or an emergency, perhaps they should stay off the line.

SENATOR MORGAN: And I don't know that we're going to change that human behavior. One of the things, I think, many people do know is the importance of having a battery operated radio. Some of the television stations didn't work, most of the radio stations on the peninsula did work during this crisis and I guess one of my concerns was whether or not the media was doing enough to inform the public because I think they're more likely to listen and hear about what they need to know when the crisis hits, rather than reading the white or yellow pages in advance. It would be nice if they would, but I'm not sure that's behavior we're going to change. But I'm kind of interested in what was done--if some of these companies

could comment on the relations with the media in trying to get them to cooperate with you in an emergency like this.

CHAIRMAN ROSENTHAL: As part of the educational process. Okay. All right, we'll next hear from Charles Mayfield, Jr., Division Manager of Telecommunications for AT&T.

MR. CHARLES F. MAYFIELD, JR.: Thank you, Chairman Rosenthal, Senator Morgan and members of the Committee. We kind of approached it--worried about our employees first, our customers second, and our physical plant kind of third. Fortunately, out of the 84,000 people we have in the Bay Area, we had no deaths, minor on-the-job injuries. We did have, unfortunately, one of our employees on the I-880, on the Cypress, or near the Cypress and her car was flattened and she lost her unborn child and suffered some injuries. Fortunately, she's back at work now and we feel very good about that. We did have nine of our people who lost their homes or apartments and we worked to provide special assistance, either in our personnel department, or our legal department, to try to help them. We have offered counseling services to a number of our people who have been affected by the trauma of this. In terms of physical--well, AT&T Foundation also made a substantial donation to the Red Cross for earthquake victims and we encouraged, and our employees responded without encouragement nationwide, to contribute to earthquake relief through the telecommunications industry service organization, the Telephone Pioneers of America.

In terms of monetary damage that we suffered, our internal AT&T-manufactured PBX's and computers and those kinds of things that we use for ourselves, we lost--had damages of about \$1.6 million.

CHAIRMAN ROSENTHAL: How much?

MR. MAYFIELD: One dot six million. Lost wages of about \$400,000 where we excused people, primarily in downtown San Francisco in our administrative buildings where we didn't have power, as you know, in downtown San Francisco on Wednesday and Thursday. They came back to work on Friday. All of our work centers continued to work 24 hours a day, fortunately, seven days a week. Those do have backup power that we provide ourselves or that the local exchange company provides if we're co-located with them.

Building damage was our biggest. We had \$18.5 million in building damage. Our network equipment, our L4 facilities, our central office equipment held up extremely well and we had \$1.2 million of damage there. In terms of abandoned facilities that we just decided--well like along the Embarcadero Freeway, for instance, \$700,000 and so roughly we had \$23 million worth of damage and lost wages as a result of this earthquake and we, of course, are not looking at anything--those are expenses not lost revenues.

The majority of our loss, building-wise, which is \$15.7 million is in the same building that Michael talked about where we have a central office in downtown Oakland, at 1587 Franklin. We did have the need to move most of our people from several of our work centers in downtown Oakland, our administrative headquarters there was unusable that we lease at 1000 Broadway and within 72 hours we were fortunate enough to be able to make the thousand or so moves that were required to move all of those people and get them back in business in AT&T center in Pleasanton which is where we have a large operational presence. That was possible, quite frankly, because that building was built with the total thought of moves and changes, bringing people in and bringing them out, and considering their data and their voice communications needs.

Because we have an integrated data synchronous network on the West Coast, we were able to electronically move all the work centers that were affected in Oakland and San Francisco to other places. Our center for PBX and voice equipment installation and maintenance for all of northern California, we moved from Oakland electronically to Pleasanton and we were up in business in one hour in that case. Our regional center for administering the public switch network, the AT&T network, never missed and we moved that internal work center to Pleasanton. We moved an operator services unit again from the Oakland office that was damaged, to Pleasanton and handled the teleconferencing, the nation-wide teleconferencing. And what we would do, is ship that to another office electronically, physically move the people and then move the work back to them. Those places would handle it on an over time basis or they'd bring in people.

CHAIRMAN ROSENTHAL: Let me ask you a question. How did your blocking or routing of calls differ or coordinate with the local telephone blocking?

MR. MAYFIELD: It worked hand in hand with, in this case, Pac Bell, or GTE if GTE was involved. We have found over a hundred year history that every call that we can get out is worth about five to seven calls in. For instance, in my own personal case, you probably can tell by my voice, I am not a native of California so I called immediately my parents in Arkansas who then, in turn, called other relatives in Arkansas and other places in Colorado and Texas. Those areas are not affected so we had my one call resulted in four or five completed conversations and what we're all trying to do is to make sure--once a person wants to make a call, we try to do whatever we can to make sure they make it through. So we work all of our network controls to ensure that we don't block any calls going out of the affected area and we try to block all calls to the extent we have to, all over the nation, that want to come in. We are always trying to make sure that everything gets out. And it changes on a minute by minute basis and there was, you know, no one percentage that was blocked. But, for instance, if someone had a 415 MPA in New York City, we would probably try to stop it right in Manhattan. So it wouldn't even traverse the network. Now, we did all of that working with the San Ramon center that was running the thing for Pac Bell. As Michael said, we also took all controls off the network at about the same time--10:00 on Friday morning which was about 65 hours after the earthquake hit on Tuesday.

CHAIRMAN ROSENTHAL: How did your deaf-TDD system function, the relay system?

MR. MAYFIELD: It did not function for about three hours. We had to evacuate this Oakland building because of structural damage that I talked about earlier and because we couldn't physically be in there for those three hours, we couldn't do anything about that. But as soon as the Oakland authorities allowed us back into that building, allowed Pacific Bell and ourselves back into that building, we then could take care of that. Everything else worked fine, but that is the one thing that we've got to figure out a way to handle because that requires physical presence. Take things off, you know, off of a terminal, off of a typewriter.

CHAIRMAN ROSENTHAL: Do you have a system in Woodland Hills also?

MR. MAYFIELD: Yes.

CHAIRMAN ROSENTHAL: That's a center.

MR. MAYFIELD: Yes.

CHAIRMAN ROSENTHAL: Okay.

MR. MAYFIELD: We have taken some steps since that time, like the Embarcadero Freeway, to reroute that and that's now been done. We had, although the service continued to hold up, we did have some damage to the protective sheathing in Treasure Island from Oakland to San Francisco and we're working with the Navy for a new easement and we are going to move that and do some better earthquake design on that. We have also had, unfortunately, a cable that was damaged by a contractor that was working to repair the Bay Bridge and that's been taken care of.

We worked very, very hard to communicate with all of our large and medium customers within 48 hours after the earthquake to find out what kind of damage they had because we did not have any service loss. We did have PBX losses due to power, commercial power going out, but within our central offices and within our network, we have redundant power, of course. And that never did go off. Our equipment held up extremely well. We were very, very pleased with it and the only thing that seemed to knock it down was power and once we got power back, we were able to bring our computers and our PBX's back. That's, I guess, the only other thing I would say is that we, like Pac Bell, did experience the largest calling volume in our history. We typically have about 85 million calls on a normal day and we had 144 million of which we completed 121 million on Wednesday the day after.

CHAIRMAN ROSENTHAL: As a result of this particular earthquake, do you anticipate making any changes in your operations at all in terms of coordination?

MR. MAYFIELD: I think we felt very, very good about the fact that we could move our work around. We felt very good about the way Pacific Bell and General Tel worked with us. I think we probably will all do a review amongst ourselves within the industry--a little bit of critique just to, you know, see if there are things we could have done better, but not any substantial things, Chairman Rosenthal.

The one thing I would comment on that you asked the other two people and we had that same situation, is as Senator Morgan said, it seems the reliability figure is the media and those kinds of people and so we try to get to the press immediately, our press people, our PR people, try to get to the press immediately. I would tell you, though, that in a natural disaster, the press is incredibly responsible and they're calling you before you call them. I mean you just pick up the phone and they're on it. And so we try to, through that means, or you can go through the UPI or AP network and present something for that to tell them not to make those calls and I'm sure that Pacific Bell's PR people did the same thing.

SENATOR MORGAN: And are you saying that at AT&T you had a media contact with the radio people?

MR. MAYFIELD: Oh absolutely, absolutely, within seconds. Yes. With many of them. Generally, trying to get the radio and the TV first and then print is right behind that. I mean they're calling right behind that also. To ask people not to make calls unless they're absolutely necessary. Certainly there are people that are concerned about what's happening. But, quite frankly, people in New York City cannot really help us in our problems in California so what we want to do, is to try to make sure that people within California can call people within California to make these things happen. That is why we try to make sure all calls get out and to the extent that we have to stop them coming in to make that happen, we do that.

SENATOR MORGAN: Thank you.

CHAIRMAN ROSENTHAL: But what if some press reports indicate that people shouldn't use the phone unless it is an emergency situation?

SENATOR MORGAN: And it's just my biases that the radio is what's immediately available.

MR. MAYFIELD: Exactly, because of the batteries.

SENATOR MORGAN: If the electricity was off, we couldn't use television, the newspapers didn't get printed until the next morning.

MR. MAYFIELD: No, right. No, the radio was calling and we were trying to get to them. And then you try to get the TV media next and then you try to get to the print media third. But if they're calling you, you take care of whoever calls you first.

SENATOR MORGAN: So you're saying that all calls were going out. Even that night of the earthquake.

MR. MAYFIELD: We were not blocking any calls going out of the Bay Area. That's correct.

CHAIRMAN ROSENTHAL: Okay, our next panelist will be Mr. J. Bowmar Rodgers, Jr., President of the Western Division, Business and Marketing Group of US Sprint. Welcome, sir.

MR. J. BOWMAR RODGERS, JR.: Thank you. Senator Rosenthal and Senator Morgan, I appreciate the opportunity to comment on the earthquake. We at Sprint have many large facilities in California, northern California, and we are encouraged by having no structural damage at all to those facilities. I

think that speaks probably to preparedness. Since we're a reasonably new company, we have the seismic code requirements for our buildings and we meet those requirements. Also every two to six kilometers we have slack in the fiber cables. You were commenting on fiber, Senator Rosenthal, and that does also help in cases of earth movement. I think something else that's important is, and I'm sure this is true of all of the people here, we have normal procedures for preparation for incidents like this and I think that should be encouraging to you that this is something we do on a normal basis as part of our training routine. In fact, I think one of the critical elements coming from this is we're working with Pac Bell at the Tustin meeting on March 1 to co-work with them so that there is a good handshake between a local phone company and a long distance company, in our case.

In our facilities we have water, medical supplies, food and storage capabilities, so we are preparing in that case and, as you talked about the power supplies for fibers since that's what Sprint basically does, the generators will operate for an excess of two weeks to keep the power going from that standpoint for our facilities. So that's something that is a requirement. I talked with one of the members of my staff with our facilities back in North and South Carolina area regarding Hugo and we also had an excellent report relative to that incident. So with the Hinsdale fire and the San Francisco earthquake and the Charlotte hurricane, we have a good feeling of how to, at least, address these things. We handled 5.1 million calls in the Bay Area. We normally handle 1.8 million calls. There probably was some inconvenience but we believe it was very, very small. We worked closely with Pac Bell to choke off incoming calls to free up capacity for the outgoing calls. We also, and I have a representative of our media staff here, contacted radio, TV and the news. You're right, Ms. Morgan, that radio is the first one, and I think that everybody should be advised to have a battery operated radio. It's surprising how just candles and a battery operated radio are simple things you don't think about until you scramble around trying to find them. I think, in summary, we feel that...

CHAIRMAN ROSENTHAL: And a glass of water.

MR. RODGERS: That's true, too. And don't turn off your gas if it's not necessary. But I think in summary from our standpoint, it's important for us to stay on our toes. We are working with Pac Bell, we did choke off the calls. I think our facilities are new and strong structurally and we should pay attention to those kinds of things. I don't really have anything more to add unless there are question from you all.

CHAIRMAN ROSENTHAL: Any questions? Thank you very much for the testimony. We'll next hear from Mel Kemp, Director of Operations, MCI Telecommunications.

MR. MEL KEMP: Mr. Chairman and Committee, I would like to thank you for allowing us to participate because MCI, much like AT&T, Pacific Bell and Sprint agree that the best way to deal with a disaster is to be prepared. In summary, MCI suffered, fortunately, no personal injury to any of our employees and very little structural damage with the exception of a repeater site at Loma Prieta, very close to the center of the earthquake. Traffic was subsequently offloaded from this repeater site which is part of a radio route going up and down the state of California onto other fiber and/or radio facilities within the state. We initially lost commercial power to all of our Bay Area terminal sites and all sites were subsequently powered with either stationery or mobile generators until commercial power was restored. The most severely impacted sites were San Francisco, Salinas and San Jose. We also lost commercial power to our customer service center. Unfortunately air conditioning and lighting were not available so it shortened the hours of operation. To counteract that, we set in place emergency reroutes which allowed calls to be handled by other customer service centers across the United States.

MCI's national network incurred in excess of a 33 percent increase in traffic in the Bay Area network, very similar to what--to numbers referenced by AT&T. In excess of 50 percent the day of the earthquake and somewhat in excess of 25 percent on the day after. Because MCI's network remained intact after the earthquake, we were able to work with the state of California and supply them with additional capacity in order to beef up their communications into their disaster coordination center and also we were able to supply emergency long distance service to those emergency sites set up to accommodate victims displaced by the earthquake. In addition to this, we worked with our major customers who had sites outside the state who were able to handle additional call volume. And through emergency reroutes, the software driven systems we were able to accommodate some of those customers.

Coming back to my original point, I want to emphasize very much the same as what AT&T talked about. The secret to dealing with disasters is a good plan. I feel that MCI does have an excellent emergency plan. It includes the use of alternative fiber, radio and/or satellite facilities and also is coordinated via a hot line or automatic ring down with Pacific Bell. As a side note to that, we have met

with Pacific Bell after the earthquake and talked about what they did during the disaster and we, too, will be participants in both the Tustin and the Sacramento follow up and emergency drills.

Any good disaster plan should include--should start at the beginning and involve the construction facilities to be sure they are in compliance with the strictest earthquake codes. Bell equipment is properly strapped and bolted and the fact that the facility is adequately protected by fire suppressent equipment. All MCI facilities meet that criteria.

CHAIRMAN ROSENTHAL: Is there an industry standard?

MR. RODGERS: I can't say that there is an industry standard. Most facilities are built in compliance or in excess of local building codes.

CHAIRMAN ROSENTHAL: Thank you.

MR. RODGERS: And I think as you addressed in your early statement, all disaster plans should include how will you deal with your customer, or how will your customer be able to reach you during these disasters, and MCI does have a place, as mentioned, alternative customer service centers across the United States that we can reroute traffic to and our sales and marketing group actively solicited our customers to volunteer any help we can offer.

But, maybe we could do better. As I mentioned, we have met with Pac Bell and we will continue to meet with them to enhance our joint planning and joint reactions to such a disaster. I believe that we need to better coordinate with PG&E to ensure that commercial power is restored to our facilities as quickly as possible. And I think last, we need to work on internal communications to ensure that we have done a good job communicating within our own company what the next step will be to ensure that our customers get a concise and consistent message.

CHAIRMAN ROSENTHAL: Thank you very much. I want to again welcome Commissioner Duda. Thank you for joining us. I know that you had to, you came in before, you had to go to another meeting. I'm glad to see you back.

COMMISSIONER DUDA: We had a conference and had agreed to preside with the Administrative Law Judge. I'm glad to be back. Thank you very much. I'm enjoying listening to this proceeding today.

CHAIRMAN ROSENTHAL: Very good. All right, our next panelist will be Jim Dixon, Executive Vice President of McCaw Cellular.

MR. JIM DIXON: Thank you, Senator Rosenthal, Senator Morgan, Commissioner Duda. As some of you know, McCaw Cellular is the largest cellular telephone operator in the country. We operate systems nationwide. In California, we operate a cellular line in Sacramento, Redding, Yuba City, Stockton, Modesto, Fresno, Visalia, Monterey, Salinas, and Napa/Vallejo. Additionally, we are partners in the systems in the Bay Area, Los Angeles, Santa Rosa and Santa Cruz. As to the areas affected by the earthquake, I believe you all know that the FCC licenses two companies in each of these metropolitan areas and the Bay Area is served on the wireline side by GTE from Santa Rosa to Monterey and as their competitors, we participate in partnerships in the operations in the Bay Area, Monterey, Salinas, Santa Cruz, Napa, Vallejo and Santa Rosa.

It was critical, particularly during the early stages of our response to the earthquake, that our partnership participation in each of these partnerships greatly facilitated the cooperation between these competitive entities. A bit of a personal, first hand observation, my wife and I were at Candlestick at the time of the quake and we got one of the initial values of what cellular was in that by five thirty we were able to ascertain where our children were and that the family was well and that everybody was whole, so, you know, we had a real first hand dose of the value of cellular and we got an understanding very quickly of what role we might be able to play.

As that was going on, immediately after the earthquake, our network operations center, which is in Seattle where our headquarters is, began a coordination and communications function with already the help of AT&T whose help we needed to establish communications in and out of the area. We were able to tie in our system operators in Oakland with our engineering support folks in Sacramento and Seattle. We were also beginning to tie in the plans to distribute equipment, the phones themselves.

By 7:30 that evening, I had been able to work my way over to Oakland to our mobile switching center where we established a command and control center to coordinate several aspects of our challenge--the system needs, particularly, but also the plans to distribute telephones and the plans to acquire the necessary generator and power devices that we'd need, as well as some of the additional technical support that we needed to bring in from around the country. We'd also been able to establish direct communications with the Office of Emergency Services in Sacramento.

We were fortunate in that we had had an emergency preparedness conference with OES just a few weeks before the earthquake. That gave us an understanding of who we needed to coordinate with, who we needed to talk to. That was instrumental throughout our efforts over the next week or two. They were able to both help us see where we could be specifically of service to the community, as well as help us affect that service. They were able to get us things like National Guard convoys to distribute phones, we were able to get special permits through Caltrans to move trailers and equipment, we were able to get flight plans approved to airlift equipment and telephones around the Bay Area. So that coordination, cooperation and history of experience there was really critical. We were also subsequently able to connect with Senator Morgan's office, and Senator Alquist's office, as well as Senator Mello and Assemblyman Farr's offices, and they were also helpful in connecting us with the people who we could help.

At the early stages, we saw three priorities, basically. We had the challenge of keeping the system up, which the systems survived the shake quite well, to arrange trunking so that our callers could access the long distance network which we were also affected by, as everyone else was. And then additionally to provide for the restoration and the power to support the cell sites. Many of the places where the cell sites were located were without commercial power, although in most instances, they reverted to generators so there was not any interruption of service. It was the inevitable logistic challenge of getting the generator's fueled and ensuring that over whatever duration this was going to be, fuel management actually became one of the logistic challenges that was high on the priority list.

SENATOR MORGAN: Mr. Dixon, were some of those centers, were they within the epicenter area?

MR. DIXON: Yes, very much so.

SENATOR MORGAN: Could you make known the location of those centers, or is that top secret?

MR. DIXON: It's not a matter of being top secret. I don't have the specifics with me.

SENATOR MORGAN: I can get it later, but I would like to know where your centers are.

MR. DIXON: We'd be happy to provide it to you. Yes, there are more than sixty around the Bay Area, so it's a rather substantial investment.

SENATOR MORGAN: So of those sixty, how many were out, because of lack of electricity?

MR. DIXON: Well, they weren't necessarily out. They reverted to generators. And the challenge then was to ensure that the generators were going to stay fueled. Logistically, simply getting fuel trucks around the Bay Area became a major challenge. It was one area that the industry was extremely cooperative with. We had cooperation between GTE, between Pac Tel, Telesis and Bell and the cellular operators simply identifying who had fuel where, and how we might get that fuel to generators. We all pretty much had that same problem of getting fuel to the generators to the remote locations. An area of great cooperation.

SENATOR MORGAN: Is storage of fuel on site a problem for you and others?

MR. DIXON: Well, the problem is how much fuel do you want to store, given zoning considerations, given the size of tanks, given safety considerations. We did not know, the night of the quake, just how many days we were going to have to keep these generators running.

SENATOR MORGAN: Because I'm sure get into the zoning, as you say, and the toxic hazardous materials ordinances and all of that if you start storing the fuel, so you're in a catch-22. If you store it, then you have problems; if you don't store it, you have problems.

MR. DIXON: Yes, exactly. The next thing that became a real challenge to us is, unlike the rest of the telecommunications industry, whose primary challenge was to keep the phones that existed working, our challenge was to distribute phones to the people who didn't have them and who needed them. And we, over the course of a three or four day period, we distributed, loaned, if you will, over 2,200 phones to the various emergency service entities. Now that's just the McCaw Cellular One operation. I know GTE made a substantial contribution of its own. So there probably was some 3,000 phones offered to the community during this period.

CHAIRMAN ROSENTHAL: Was that gratis, or who picked up the cost?

MR. DIXON: It is at the expense of our shareholders. The most interesting aspect of this is that of the 2,200 phones that we distributed, we look to receive back almost 95 percent of them. Now, remembering that we had tents set up at the Kirk Street command center, we had a truck distributing phones off the back of a truck, at the Cypress Center. We had people coming and going out of our Oakland office. We had people in our Monterey office just giving out phones. It's amazing to us that some 95 percent of them are simply going to be returned and that fact that we could trust the community to be that responsive is really very gratifying.

CHAIRMAN ROSENTHAL: Pac Tel, too?

MR. CAREN: Yes, that's correct, Senator.

MR. DIXON: I think probably the things to say in conclusion that we learned, the little bit of time we spent with the OES in a preparedness meeting has paid off dramatically simply to know who to talk to. Not necessarily the plans were so critical, although they were, but we needed an awful lot of innovation and we did a lot of creativity as we faced these challenges, but simply being able to know who to talk to in the Governor's Office to get a helicopter flight plan approved to make an airlift from Oakland to San Francisco, without that kind of knowledge, we would have been much less effective. The other thing that I'd like to mention, as I said earlier, is that there is a very strong spirit of cooperation amongst all the telecommunication utilities, even amongst competitors, for this particular incident. And we are also extremely bonded, if you will, with the service utilities, with the gas, the electric utilities.

Following from this event, we've certainly seen cellular in a different light. The consumer sees cellular's role in emergency preparedness and personal safety much differently than they did just a few months ago. We have a tremendous amount of new interest from the emergency services providers, fire departments, police departments, county government, although most all used cellular to some extent in their plans, they have increased their inclusion of cellular in their arsenal of how to deal with these sorts of things.

CHAIRMAN ROSENTHAL: Do you think we should advocate more of it in terms of backup, in terms of our planning process?

MR. DIXON: Well, we've--I think we'd be biased about that, Senator. I'd encourage advocating it, but we're seeing the people who really used it advocate it and I think the other thing the industry has done, although we did this very quickly, we're much more prepared now. The delivery of portable cell sites to replace cell sites that may go off the air or to accommodate new traffic patterns, such as we saw in the Bay Area very quickly, as well as the plans to distribute and support generators and the emergency distribution of phones--we're much better equipped at this point to do that although we were apparently quite effective at it. And given the communities' response in returning the phones that we loaned out to such a high degree that we're really encouraged that what we were able to do was appreciated.

CHAIRMAN ROSENTHAL: Are cell sites prone to damage?

MR. DIXON: Well, unfortunately, Senator, one of the cell sites in the Bay Area system was damaged so severely that one of our employees was killed during the quake. He had been working on the cell site. Now that's exceptional. That is at the very extreme. Cell sites constructed, towers that are constructed now currently are very safe relative to this sort of earthquake standard. Unfortunately, the challenge of developing more towers, new towers, runs into environmental issues of whether people want new towers in their areas and...

CHAIRMAN ROSENTHAL: NIMBY.

MR. DIXON: Excuse me?

CHAIRMAN ROSENTHAL: NIMBY—Not In My Backyard.

MR. DIXON: Exactly, not in my backyard.

CHAIRMAN ROSENTHAL: There's another one that I just learned about. It's called NIMTOO--Not In My Term Of Office.

MR. DIXON: I guess given NIMBY and NIMTOO, we don't--we're not as able to construct new towers as we'd like to be and we end up having to accept rooftops or buildings that may not be as current as we'd like them to be and therein lies a bit of a concern.

CHAIRMAN ROSENTHAL: Thank you very much. Let me just ask Pac Bell if you have any comments regarding the cellular operations.

MR. CAREN: I have a subject matter expert in the audience that I'd like to throw that question to if I may.

CHAIRMAN ROSENTHAL: All right, we'll give you two minutes.

MR. CAREN: Okay, let me introduce Carolyn Casey.

CHAIRMAN ROSENTHAL: Carolyn, why don't you just come up and take his seat for a couple of minutes. Just any comments that you'd like to make regarding the cellular operation.

MS. CASEY: First I think we need to clarify for everyone that's here, the Cellular One system in the Bay Area is a joint effort between the McCaw Communications and between Pac Tel Cellular.

CHAIRMAN ROSENTHAL: Okay.

MS. CASEY: I think that Jim has covered things extensively. The one thing I do want to mention is all of these people talked about loads on the system and certainly the cellular system saw an increase in

tenfold the number of calls that we typically would process at our busiest hour of the day and we saw that for an extended period of time. But the system was able to handle those. We do not have our capability or we do not block inbound or outbound calls. That was letting people call back and forth amongst one another. I think one thing also that you need to understand for emergency preparedness, if you are looking to cellular, we would advocate cellular phones on both our system as well as our competitors because you never know what will happen to your own system or to your competitors and you need multiple phones on each system. The only way to avoid the crowding on the Pac Bell system would be to talk from one cellular phone to another cellular phone. You completely avoid Pacific Bell, or your public telephone network by doing that. And that's something that needs to be understood.

CHAIRMAN ROSENTHAL: Okay, thank you very much. We'll now go to Jim Butler, the Administrator of Business and Government Affairs, Pacific Region for GTE Mobilenet.

MR. BUTLER: Thank you Mr. Chairman, Senator Morgan, Commissioner Duda. Fortunately GTE Mobilenet and McCaw, Pac Tel and various other cellular utilities, their networks proved quite reliable. In our case, only three out of a hundred and twelve sites were knocked out, all three were back in 48 hours. To answer your question, Senator Morgan, one site was located one half mile from the epicenter on top of Mt. Loma Prieta. We had some generator problems there as power went out and a helicopter brought in fuel and a technician to solve those problems. That particular site was back and running in 12 hours. Prior to the land line phone service being restored, cellular communications was often the only means of communicating. The cellular telephone is unique in that it is modular, without the need for physical links between modules. Which means if one module is knocked out, all traffic can be routed, thereby minimizing disruptions in service. This is especially important for emergency planning. As like McCaw, within 12 to 24 hours we had many phones that were dispensed. 400 phones had been flown in by private jet to assist in the emergency efforts. Business was temporarily halted as employees worked around the clock to ensure that phones were assembled, programmed, tested and loaned out to numerous emergency response needs. As an example, phones were sent out to CHP, the Red Cross, various radio and TV stations, Caltrans. We loaned some to PG&E and various traffic reporting centers. This kept commuters informed of rapidly changing traffic patterns and, as a personal note, I work in Hayward and I live in Rohnert Park up in Sonoma County. And it was a crazy maze for me to get home that night. In

addition, Senator Norman Minetta's office borrowed phones as he coordinated disaster relief efforts in the San Jose area.

We had emergency restoration plans in place in which engineers monitor the network to assess all damage to switches and cells and in the event of failure, corrective action, such as rerouting traffic, increasing the power at adjacent sites and building additional emergency sites, is taken. Our service has been used in the past by emergency teams in the Bay Area to resolve crises ranging from forest fire in Vacaville to SWAT situations and we have been lauded by the OES, CHP, Caltrans in addition to some of the panel members assembled here today.

As I've said earlier, GTE Mobilenet was especially fortunate to be able to escape this disaster with minor damage. Which enabled us to help in the relief efforts.

The cellular industry has proven its potential to meet a variety of emergency needs. In order to continue to effectively assist in emergency situations, it is imperative that cellular communications companies expand and upgrade their networks. Moreover, carriers must be permitted to work without obstruction to locate cellular facilities to better serve the public. A method must be found to quickly construct needed facilities without time consuming local review and permitting. It is clear that cellular phones play a vital communications role in today's society. The cellular industry welcomes the opportunity to work with Senate Energy Committee as well as the California Public Utilities Commission to better serve the citizens of the state of California in emergency situations.

SENATOR MORGAN: Mr. Chairman.

CHAIRMAN ROSENTHAL: Yes.

SENATOR MORGAN: I would just like to use this opportunity to say thank you on behalf of my constituents and those outside my area which, runs from San Jose to San Mateo, for the--particularly the telecommunications industry during this crisis. As soon as our office--well, our office didn't open the next day, but I did have someone in there. The phone was ringing off cellular phones to our office to our constituents and they were very helpful in the outreach and in addition to the actual service was really appreciated.

CHAIRMAN ROSENTHAL: Also I add my thanks to the panelists and the telecommunications industry for the job it did during that earthquake. Thank you very much. We'll now have the final panel,

the Statewide Government Panel. We'll have John Passerello, Charles Imbrecht, Al Tolman, Lee Deter, Russ Copeland. Let me just, for those of you were not here earlier, let me again caution the panel. You're not going to read your statement, give us your high points, provide us with your material for the committee's use. John Passerello, the Assitant Director, Response and Recovery, Office of Emergency Services.

MR. JOHN PASSERELLO: Senator Rosenthal, Senator Morgan, Commissioner, staff, thank you very much for the opportunity to be here today. I'm representing William Medigovich, the Director of the Office of Emergency Services in Sacramento.

I had the opportunity to serve as the Emergency Director for the State Operations Center during this earthquake and I have to repeat some of the comments. This was like an exercise. This is my first vist to the Bay Area, I was allowed to come, since October 17, so it did run like a well run exercise for us in Sacramento.

We had just finished exercising in August a major catastrophic earthquake based on the Hayward fault and that helped, I think, more than any one single thing for federal, state agencies, cooperation. We received much more cooperation during this event than we've ever seen in the past. Also the amount of exercising and training that only we do, but that way we work with local government and private industry, paid off markedly in this earthquake. Needless to say, we were very, very lucky. It was not a catastrophic event, the epicenter was in Loma Prieta, and it was not in Oakland or San Francisco, otherwise we'd be in much worse shape today.

In terms of utilities, I have with me Ron Grasser who will be sharing the time with me to speak to you about the utilities emergency plan and the UPC and also to answer your question about that military airlift that we, that you were wondering about earlier.

In the State Operations Center, we have all the state agencies with us, as well as federal agencies and then we were in touch, right after the earthquake, we have a warning center that has seismic monitoring equipment so we knew immediately when the earthquake hit without any telephone calls. We were lucky that it was 5:04 since some of our people were still in the building so our operations center went into operation within the first half hour. Also within the first half hour, we were in direct communication with all of the counties.

How we operate is through a regional office in Pleasant Hill and then through all the counties and the counties, in turn, work with the cities and special districts so there is a system of mutual aid, not only for help, but for getting information back and forth through that system. We did not depend on the telephone, although we were very, very happy that the telephone system was up and running during those first few hours. In those instances where it was not, we used our radio communications systems. Our microwave system held up fairly well so we were able to use that, as well as the other systems that we have.

But in answer to your question about what did we learn and what are we going to do in the future, during the second day of the earthquake, we noticed that local government did not realize the capability that the state had to help so we sent state representatives immediately into the county EOC's asking their permission, first, of course. But this was in addition to our state representatives that we already had in those EOCs. We put in California National Guard representatives, California Department of Forestry representatives, California Conservation Corps and those state agencies that were able to help local government immediately with some of their resource needs. We are now making that a part of our general operating procedures and that's one of the changes that we have made already.

In addition to that, you will have a budget package before you to work with during this budget session. The door was wide open and so we filled it. And one of the things is a \$4.6 million proposal for communications, including satellite communications, a transportable cellular communications, high radio frequency communications and other types of things. So there is a lot of things that we learned from this particular event that we can improve on and we're taking measures to do that. I'd like to turn it over at this time to Ron Grasser.

MR. RONALD E. GRASSER: Good morning.

CHAIRMAN ROSENTHAL: Yes, identify yourself for the record and tell us who you are.

MR. GRASSER: Okay, my name is Ronald E. Grasser. I'm the Utilities Coordinator for an organization called the Utility Policy Committee. This Utility Policy Committee is an organization that's staffed, you might say, from the major utilities throughout California. In fact, our Chairman is Steve Welch who is the Vice President of Pac Bell, Vice Chairman is Glen Bjorkland, Vice President of Southern California Edison and our Chief of Utilities is Bill Mazzotti, who is Vice President of PG&E. This organization...

CHAIRMAN ROSENTHAL: Was this group organized by OES?

MR. GRASSER: This organization was organized back in the '50's during the civil defense era and has grown over the years. I'm an employee of the Utility Policy Committee and I am located at the State Office of Emergency Services and operate as the OES Utilities Division Chief. And the organization is primarily based on a lot of things that you've heard today in coordinating activities between the utilities, organizing emergency response plans and sharing information back and forth from utility to utility. We have quarterly meetings and we address all the emergency issues. In fact, we had a meeting in December and went over the response to the earthquake and have goals and activities that we're working on for the rest of the year to bolster our operation. The primary purpose again of the organization is to maintain that communication and coordination between all the governmental entities from the state level right down to the counties. I attend all of the California Emergency Services Association meetings which is represented by the counties and work with them and take their issues back to the utilities and share this with them. I've furnished you a copy of the plan—it's in our documents there, of the Utilities Emergency Plan and this plan has been in existence for years and has been, you might say, revised over the years and in fact we are in a position right now of taking a major look at that plan to make sure that all the experiences that we learned from this earthquake are addressed in that plan. We have a meeting coming up—the organization consists of, we have what we call a state operating engineer for each of the disciplines which is gas, electric, water and now we're bringing the telecommunication group into the organization. Pac Bell is in the organization and we're actively working to get the other representatives that were here this morning in.

CHAIRMAN ROSENTHAL: Let me comment. There was an article in the L.A. Times that reported that the most glaring deficiency in disaster planning was the absence of a statewide emergency communication system. And the lack of equipment and trained staff to conduct large search and rescue operations. Would you like to comment on that?

MR. PASSERELLO: I'd like to comment on that for a moment, Senator. There is a plan. Especially for search and rescue. Telecommunications we are working on with the Department of General Services. But in terms of search and rescue there is a plan for that and we have adequate resources. In fact, the international resources that were on their way, we had to turn around and send back home because we had adequate resources here ready to go.

CHAIRMAN ROSENTHAL: In some of the areas, the Emergency Broadcast System failed, in some cases it worked well. And in some areas it wasn't used at all. Do you want to comment on that?

MR. PASSERELLO: Yes, your earlier speaker, Henry Renteria, spoke to that issue, I think, very well. The EBS system is a volunteer system. It is activated by the counties. We had adequate media representation and a system to notify all media that were on the air and use that as well as having the counties use that system, so there was really no need to activate, on a formal basis, the EBS system, at least from our level.

CHAIRMAN ROSENTHAL: Did it fail in some of the Bay Area Counties?

MR. PASSERELLO: I'm not aware of the failure of that system. All I know is that it wasn't activated.

SENATOR MORGAN: May I follow up on this?

CHAIRMAN ROSENTHAL: Yes, Senator Morgan.

SENATOR MORGAN: I guess the only criticism I've heard lodged all morning of one agency against the other, if you will, was the representative, Mr. Houck, from the Water Association. And I guess I heard, in some of his presentations, some criticism of the lack of coordination that was offered out of the county OES center which leads me to ask what kind of oversight you have on each of the counties and what level of staffing and expertise you feel is in place throughout California.

MR. PASSERELLO: There's three things. First, we have a model emergency plan. That's called the "The Multi-Hazard Functional Planning Guidance", which all the counties have. We've given that to them several years ago and all their emergency plans are modeled on that. Including in that is a full utility section including water, telecommunications, everything else. It's really up to them to make sure that they get that activated.

About 20 percent of the cities and counties in the state of California are financed through federal funds through our agency to make sure that they have emergency plans that are fully filled out. It is not a state requirement that there be an emergency plan at local government, unless they have a disaster council and during the '86 floods, there were hearings held as to why there wasn't a mandatory emergency plan by everybody and having it according to some guidance, some--the main thing, I think, the Legislature looked at was the money at that time that it would take to do that in terms of mandating

something on local government. But we have worked with local government. We continue to work with them, cities and counties, so they do have the guidance in front of them—they all have that. And now what we're working on, the water bases is at the state level, using the UPC, the Utility Policy Committee and the State Department of Water Resources and Health Services and, in conjunction with all the water companies in any given area, that networking is now going out to make sure that, first of all, they know each other exists which was, I think, what you heard this morning, as well as making sure that everybody has an adequate plan for networking and knows where to report and who to talk to.

SENATOR MORGAN: It just suggests I need to go back to Santa Clara County and find out where the communication didn't happen. Because I know that they have plans and emergency reviews and all of that.

MR. PASSERELLO: That's right. And water is a part of that.

CHAIRMAN ROSENTHAL: Did you say, maybe I misunderstood. Did you say that only 20 counties have these emergency plans?

MR. PASSERELLO: Twenty percent at any given time. The federal government allows three million dollars to be spent, through our office, to actually finance the salaries of emergency services coordinators in about 20 percent of the jurisdictions. Now the other 80 percent of the jurisdictions have emergency service coordinators, but they're not under the same close mandate or perusal by our office to make sure that they have an adequate emergency plan.

CHAIRMAN ROSENTHAL: Okay. One other question I'd like to ask, concerning the counties and cities that are not implementing the Emergency Broadcast System, for a number of reasons, but primarily as it relates to the deaf and the hearing-impaired, because they don't know what's happening. Could you comment on that?

MR. PASSERELLO: There's more work that needs to be done in that area, definitely. And there are systems, as I understand it, at the local government level, where they have identified by household people that are either in need of help especially, perhaps also hearing impaired. But we've talked with local government and each fire department seems to have a fairly decent knowledge of that so I can't comment on local government's ability to get involved with the hearing impaired.

CHAIRMAN ROSENTHAL: I understand there are a number of resolutions and bills in the Legislature dealing with those kinds of issues.

MR. PASSERELLO: Yes. I'll just briefly summarize...

MR. GRASSER: And answer the question about the military.

MR. PASSERELLO: Oh, yes, I will.

CHAIRMAN ROSENTHAL: Yes, just tell me about the military.

MR. PASSERELLO: I will--the military. Well, in fact, I might as well cover that now since it's fresh in your mind. At the last year's Response '89 exercise in Sacramento, I participated in that and in that exercise we actually exercised the use of tasking the military to move heavy equipment. So I went through the scenario and learned the process. When PG&E called me at the OES headquarters and to see what could be done about moving some of this equipment rapidly across the country, because it would take probably two weeks to get out here by truck, I went into the system, went into the OES office, talked to the Director, and we contacted FEMA and they ended up and tasked the Sixth Army to arrange for the shipment of this equipment. We gave them the size, the weight of this equipment and where it was at and let them decide how to get it out here and, of course, the only carrier that would bring anything so large was C5A's and it was two military flights on that. So I participated in that.

CHAIRMAN ROSENTHAL: Fine. Thank you very much. Our next panelist, Chairman of the California Energy Commission, welcome, Charles Imbrecht.

MR. CHARLES IMBRECHT: Thank you, Mr. Chairman, Senator Morgan, Commissioner Duda. Your ears would have been warm yesterday with compliments on another meeting I attended. Mr. Chairman and Members it is a pleasure to be with you today.

I'll just quickly run through our prepared remarks. I'll just note, as I'm sure most of you are aware, the Energy Commission has responsibility for promulgating the California Energy Emergency Contingency Plan and updating it on a five year basis. We are now in the second version of the Contingency Plan as adopted by the Commission and also as ratified by the Governor's Emergency Planning Council. To put this in a little perspective, we actually have discovered that there are a large number of events that have potential impacts for California's energy supply. In fact, in the last 18 months, we have either gone through a monitoring and verification phase on six separate incidents, the

Valdez oil spill, the Richmond Oil Refinery fire, the Shell Oil Company North Sea Oil Platform explosion, the San Bernardino Gasoline Pipeline explosion, the Whittier Narrows earthquake and, of course, the Loma Prieta earthquake. We provide a detailed assessment based upon our concern of impact on provisions of basic health and safety services or on the state's economy to the Governor, the Legislature, the Office of Emergency Services, the U.S. Department of Energy and its NESCOM interconnection system, as well as the many private sector counterparts of the Commission that are actively involved in making this process work effectively.

Just to give you a rough idea of how many we deal with, aside from the public agencies that I've already mentioned, the West Coast and--excuse me, the Pacific Gas and Electric Company, the Southern Pacific Pipeline Company, the California Service Station Council, Exxon, Shell, Arco, Unocal, Chevron, TOSCO, and Pacific Refining were amongst those that we were in daily contact with during the several week period after the quake here in the Bay Area. We provided six comprehensive situation assessment reports that dealt with the nature, extent and duration of the potential energy supplies and the impacts on the electricity, natural gas, and petroleum supply systems. I'm sure most of you know that we had an exemplary and outstanding response from Pacific Gas and Electric Company. In fact, my Commission recently commended PG&E and its employees for their really extraordinary efforts on behalf of the people that they serve here in the Bay Area.

We were fortunate in that we did not have any catastrophic impacts on the refinery system in northern California, which not only serves our state, but many of our neighboring states as well and so, as a consequence, we were also in daily contact with the other state energy offices throughout the western portion of our country.

The only significant damage was to the UNOCAL terminal in Richmond where we had two major tanks that ruptured and in the early hours after the earthquake, there were severe concerns about potential leakage into the Bay which, of course, would have been an environmental disaster and moreover the prospect of a significant fire hazard. I think it's important to note that the refineries joint assistance agreements were triggered the first evening. They worked very effectively and, in fact, personnel from neighboring refineries were able to assist the people at UNOCAL in dealing with the problem that they faced which was very significant. I want to stress, however, that those are not easy decisions for the

companies to make because their facilities are very large, as I know you're aware, many hundreds of acres in some cases, and so it is not easy to quickly assess what the potential implications are for very large and complex pieces of machinery that are interrelated with one another. There were a few other small ruptures and tank leakages in some of the other refineries but none that we would characterize as a significant event.

I think it's important to also note the critical nature of the redundancy that's been built into the California electric service system. The fact that Pacific Gas and Electric has an alternate dispatch center in Fresno proved to be critical in the early hours after the quake because they were able to shift their operation of the western grid from the dispatch center here in downtown San Francisco to Fresno, essentially isolating from an electric supply perspective, the peninsula area here and so the dispatch center here in San Francisco could concentrate its attention on restoration of service for the people in this area and dealing with the various substation and power plant damage that had occurred, not to mention the difficulties for the natural gas delivery system as well.

I should just note for you that this, in our judgement, was a relatively minor incident. And I know that sounds extraordinary in the context of the damage that was experienced here in the Bay Area, but we have been actively engaged in planning for much more significant incidents, including earthquakes of the 7.5 magnitude along both the Hayward and San Andreas faults. I think it's important to note that under the planning that we've done, our suggestion is that we could anticipate far more significant interruptions to underground supply and delivery systems for all of the variety of fuels, etc., that are used in our integrated system in California.

CHAIRMAN ROSENTHAL: Apropos of that, let me ask you a question, sir. Supposing there were a more serious disruption, and your plan, you're talking about that type of thing. At that point, would the market decide who got the energy, or would government?

MR. IMBRECHT: Actually, I was just coming to that, Senator Rosenthal. As I believe you are aware, our plan does call for the activation of a state petroleum fuel set-aside program that is triggered by an executive order of the Governor. In the event that that occurs, the Energy Commission can allocate up to six percent of the total petroleum supplies moved from refinery or terminal to end-use market within the state, three percent for restoration and provision of essential emergency services and

three percent for general mitigation of economic or other special consideration problems in the state. In this instance, because it was our assessment, after careful consultation with the refinery and petroleum infrastructure, we did not face the prospect of immediate shortages and, while there was some uncertainty during the testing hydrostatically of the transmission lines for liquid products under the Bay, and so forth, the bottom line was we had enough in reserve and in storage, as well as product en route to California, and finally the fact that the refineries, themselves, had not been significantly damaged that we did not conclude that there was a likelihood of such a disruption and therefore did not request the Governor for those emergency powers. But that option does exist and we are one of the few states in the country that has that option. I was going to mention earlier that I think it's generally viewed today throughout the country, those that are involved in emergency energy planning, that we have the most comprehensive plan and operational response capability in the United States. That's not to say it's perfect, but it certainly has come a long ways in the last few years and a lot of that has to do with the exercises we've conducted as a subsidiary part of the activities of OES and their active cooperation with us, along with the various private sector people as well.

I should just note that disruptions of fuel do pose very significant potential problems and it's not just whether there's an adequate supply, but also whether the fuel can actually be brought to a useful purpose. We did have one case that we must note for you in the City of Hollister where it wasn't a lack of fuel products, but rather a lack of electricity to pump the fuel out of the ground in the underground storage tanks that did impact the Hollister Fire Department in their receipt of adequate fuel in the early hours. So there are a lot of ramifications about whether or not supplies are or are not available, particularly as you have to be careful about restoration of service when you have a potential of leakage and fire hazard and ensuring that you don't exacerbate, rather than mitigate the problem. For example, the power in the Richmond area, around the UNOCAL refinery was intentionally kept off much longer than necessary because of the concern about a significant fire hazard as a result of the gasoline leaks in that area. Let me just mention that the set-aside gives us a wide variety of options and it's an important tool to hold in abeyance, one that we think does provide significant insulation for our state's consumers in the event we did face a more significant problem.

I just want to quickly comment, as I conclude my remarks, on some of the observations that both I and my staff made as a result of our involvement in these activities. And to emphasize the immediate need to upgrade some of our state emergency response systems, some of those that have already been highlighted by our colleagues at OES. I arrived at the State Emergency Center approximately one hour after the quake had taken place and was there for the entire evening and early morning hours of the immediate response. I have to stress that under the circumstances, I saw a variety of state agencies perform in an absolutely exemplary and admirable fashion, but it is also worth noting that it was done in a circumstance that was not as conducive as perhaps it should have been to assist those of us who were trying to provide direction for the response. The Emergency Center quarters are, to put it diplomatically, are cramped, and there is an absence of compatible computer equipment and, as we discovered as the early hours progressed, inadequate communications capability, as well. We know the life saving efforts are critical in the first two or three days and while I don't believe that a real problem resulted as a consequence of these dilemmas, it certainly did impede our ability to deal—for an example in our case with our primary contacts that had been established as a result of our emergency plan, both with OES, with the federal government and with the utilities and fuel suppliers. We think that alternative modes of communication, such as fax machines, integrated with cellular equipment, etc., as well as examination of satellite-based telecommunications certainly makes sense and we ought to think about ensuring that those systems are interconnected with all of the major infrastructure delivery systems and supply points in the state.

One of the things that we are rethinking quite candidly is the fact that we have very good contact points, key players in the corporate offices, etc., of the major suppliers, but the fact that they couldn't talk to their own mechanical side of the operations, the refineries and so forth, any more than we could, certainly hampered early-hour assessment of problems we faced. I actually discovered that I could use the cellular phone in my car more effectively than the hard wire phones inside the Emergency Center and we ultimately relying upon that quite extensively. So,...

CHAIRMAN ROSENTHAL: Should we do more on a statewide basis in terms of cellular and who should organize it, and what do we do about the office that's too cramped?

MR. IMBRECHT: Well, I'm not in a position to answer all those questions, Senator Rosenthal, other than to say that I know OES has been examining other site locations and there are some options that appear to be possible in the Sacramento area in the non-distant future. Some of that has to do with the apparent decision to deactivate some of the military installations. That might provide some very, very excellent facilities that are essentially in place today. We have been working with their director and certainly are supportive of his efforts in that regard. In addition, I know that my staff is currently working on interface with OES on what are the best telecommunications options that would provide a dedicated system that, if not on a 24 hour basis, certainly on an emergency basis, could be separated from the remainder of the telecommunications system of the state. We think we have a need to be in direct contact with major refineries, major transmission system operational points, as well as major interface elements within the utility community, as well.

CHAIRMAN ROSENTHAL: Could you call upon the Energy Technology Advancement Programs, ETAP, in terms of developing new technologies, or hardware or thinking along those lines to mitigate those damages?

MR. IMBRECHT: That's a very good question. I honestly haven't considered that. I'm sure if the author of that legislation gave us a suggestion that that was within his intent, it would be easier for us to consider it. My recollection is that the enabling language of that statute stresses it's for R&D for the supply or mitigation of energy services, but I think, to some extent we could probably rationalize this.

CHAIRMAN ROSENTHAL: Might be able to take a look at that.

MR. IMBRECHT: I want to stress that fund is substantially over-subscribed already.

CHAIRMAN ROSENTHAL: I understand. Well, maybe we have to ask for an increase in that fund. I'd just like to make a comment. Your data contingency reports were very thorough and very helpful. And the kinds of things that kept people up to date in terms of what was actually happening. I don't know to what extent that was available to everybody that might want to know what was going on.

MR. IMBRECHT: Well, those reports were distributed, as I mentioned, to the Governor, to the key members of the Legislature that have direct oversight responsibilities. We didn't get it out to all 120 members, including southern Californians, necessarily instaneously to all the major players and the OES roundtable, if you will, as well as all of our energy industry partners as well. And as well as to the general

press corps. We think that those reports do help alleviate misperceptions of what the true situation is. Industries involved generally consider them to be a very credible and reliable independent information source that tends to verify what they're saying to the press media, as well.

CHAIRMAN ROSENTHAL: Thank you very much. Al Tolman, Assistant Chief, Telecommunications Division, Department of General Services. Welcome.

MR. AL TOLMAN: Thank you, Senator. Thank you for inviting us to participate today. I think that in reviewing the remarks that you have made relevant to your calendar, you have anticipated that I would have remarks regarding the 911 system, which I will do. But I think it's also important for the Committee to understand our relationship to the Office of Emergency Services and the Public Safety Radio Systems that they rely on.

We are responsible for the design, installation and maintenance of all the state microwave system as well as all the public safety radio systems at the state level and I'm happy to report that the earthquake caused minimal damage to those. The most extensive was our facilities near Loma Prieta. The systems maintained well, as the Office of Emergency Services stated, they used the microwave system in their communications plans. During an emergency, the telecommunications division is administratively reassigned to the Office of Emergency Services to act as a technical arm of that office for the duration of the emergency. We then can follow their dictates about restoration of services for specific telecommunication services and we want to do that along the plans that the Office of Emergency Services has established, hence the reassignment. Our association with that office works very well. We participate with them in a number of drills for emergency preparedness and that has served us in good stead in preparing for this particular event.

We also have responsibility from an oversight standpoint, not an operational sense for the 911 emergency telephone plan here in California. We have made some observations, along with Pacific Bell relative to the operation of the 911 system as it applied to the earthquake area. And I think that there are primarily three areas that we are considering enhancements to. Pacific Bell is working on the problem of delayed dial tone for the 911 system and we believe that through a private line arrangement, we can further the benefits to that system. Secondly, the center in Oakland that sustained some damage was to a data base system based on some routine repairs that were being made by Pacific Bell, but they

recognized, as do we, the need for redundant data bases for the 911 system and they are creating that system and linking northern and southern California together so we feel that will further enhance the system.

From the user's perspective we have come to the conclusion that some of the public safety answering points where the 911 calls are actually answered by city and county personnel need backup facilities in case the primary facility is damaged and cannot respond and we're working with the cities and counties in an attempt to provide further backup facilities. The last significant event regarding the 911 system is that we have an emergency translation system that is state-wide but located in Sunnyvale. During the emergency, because of the call blocking of incoming calls, some of the public safety agencies outside of the affected area, could not maintain communications with that translation service so we are looking at attempting to duplicate that or redundantly configuring it so that we can get greater use out of that system. Basically that's my remarks, I'd be happy to answer any questions.

CHAIRMAN ROSENTHAL: How did the 911 work?

MR. TOLMAN: Good. Absolutely good.

CHAIRMAN ROSENTHAL: Okay, didn't have any problems that you heard about?

MR. TOLMAN: No.

CHAIRMAN ROSENTHAL: The earthquake raised some questions as to how state and local governments might be able to help their citizens if their own buildings are damaged. Have you looked into that issue?

MR. TOLMAN: No, I think that that...

CHAIRMAN ROSENTHAL: That that's not under your...

MR. TOLMAN: No, I thought we had someone from Buildings and Grounds that was here to address that.

CHAIRMAN ROSENTHAL: Okay. Maybe we'll ask them if they can get back to us. Thank you very much. Our next panelist is Lee Deter, Chief of the Office of Traffic Improvement for Caltrans. Welcome.

MR. LEE DETER: Thank you, Senator. Thank you for the opportunity to appear here today, Senator Rosenthal, Senator Morgan, Commissioner. You asked to hear about Caltrans' role with the provision of trans-Bay ferry services immediately after the earthquake in October.

Basically, Caltrans has three, or had three major roles. The first was as a facilitator when we worked with the Metropolitan Transportation Commission, the Cities of Alameda, Oakland, Berkeley, Richmond and the Port of Oakland in coordinating and contracting for ferry service with the private operators or owners of ferry boats to get them available for services across the Bay, when the Bay Bridge was put out of service. Secondly, we acted as the contractor with the State of Washington to provide some additional boats that were brought down from the State of Washington. The availability of those boats was obtained through the Governor's office and through Senator Kopp's office. And third, we acted as the broker or clearing house, if you will, for the funds that were necessary to enter into those contracts with the private providers to provide that ferry service during that emergency.

SENATOR ROSENTHAL: Did you work with the PUC in coordinating that emergency ferry service?

MR. DETER: I understand that early in the emergency, the Public Utilities Commission worked with our people here in San Francisco and with the ferry boat operators in establishing the rate structure for the duration of the services—the fares, if you will, on the trans-Bay service.

SENATOR ROSENTHAL: Very good. Thank you very much.

SENATOR MORGAN: May I ask a question, Mr. Chairman?

SENATOR ROSENTHAL: Yes.

SENATOR MORGAN: Mr. Deter, rightly you came in and restriped some of the roads in the Bay Area, particularly the Dunbarton Bridge, to absorb more traffic, as a result of the earthquake and I don't know how many other places you were able to do that as an emergency accommodation during that time. Do you know what the plans of Caltrans are, as far as returning the Dunbarton Bridge or any other areas that were restriped to their original configuration?

MR. DETER: No, Senator, I do not. But I am certain that we can provide that to you very soon, next week.

SENATOR MORGAN: My cities—a city, I should say, has asked me to look into that...

MR. DETER: Yeah, to my knowledge, I think we did some restriping also in the North Bay. Those are two instances that I'm more familiar with, Dunbarton, as you mentioned and then up here on the San Rafael I think we did some too.

SENATOR MORGAN: It's something I need to explore because there are those, probably, who will be happy that they've been restriped and want to leave them that way. I'm getting pressure the other way saying, no, we want to go back to four lanes, we don't want six lanes. And so I just put you on notice that we will need...

MR. DETER: Yeah, I've heard of that issue although I'm not really familiar with it.

SENATOR MORGAN: I'll follow up outside of this meeting.

SENATOR ROSENTHAL: There's some conversations, discussions going on concerning the ferry service, whether or not it will be continued or not. Do you have any comments?

MR. DETER: Well, the ferry service, as you know, the provider is the private sector and currently the funds that were obtained and used during the emergency and subsequent to the emergency are being used to subsidize the services between Alameda, Jack London Square in Oakland, Berkeley and Richmond. We have enough funds right now available through the use of emergency highway funds, FEMA funds, and funds provided by the Legislature in the 36X bill in the extra session that we think we'll be able to continue those services through the latter part of March. Now we are working on the process to appeal to try to obtain more FEMA funds to try and extend those services. But that's the situation that we're in right now.

SENATOR ROSENTHAL: Thank you, sir. Mr. Russ Copeland, Assistant Director of Safety Division of the PUC.

MR. RUSS COPELAND: Good afternoon, Chairman Rosenthal and Senator Morgan and Commissioner Duda. I am Chief of the Utilities Safety Branch in the Safety Division and I am responsible for administering the Commission's Safety Program as it relates to the gas and electric utilities and with Commissioner Duda's permission, I should be able to address the questions you may have pertaining to the role of the Utilities Commission and the Utilities Commission staff played during the earthquake. We were actively involved in one fashion or another with activities relating to gas, electric, water, telephone, rail commute service, railroads and transportation facilities, such as the role that we played with the ferry services.

Much of the work that we have done, I think, will be of interest to you is the work that is being done subsequent to the earthquake. For that I would, I know the hour is getting late, but I'd like, if you would

bear with us, to provide the opportunity for some of my colleagues who are experts in a particular field to address issues that are pertinent to their fields. So with your permission, what I will do when I finish my remarks, is vacate the seat and turn it over to the people that I introduce you to now in the following order. First of all I'd like to introduce...

SENATOR MORGAN: Mr. Chairman, if I could interrupt. I apologize, but I do have a one o'clock meeting and the question that I have relates to water so if your person dealing with water issues could start, I'd appreciate it.

MR. COPELAND: Do you want to have it now, or... Okay, we can handle that right now, if you'd like.

CHAIRMAN ROSENTHAL: Yes, we'd like.

MR. COPELAND: Just basically, let me give you just an idea what happened during the water then I'll ask Mr. Penny here...

CHAIRMAN ROSENTHAL: You have a total of 15 minutes. I don't care how you divide it up. If you take five of them, you've got ten left.

UNIDENTIFIED VOICE: Do you have more questions for us, or should we cede the seats.

CHAIRMAN ROSENTHAL: No, I think we might--I think we're through with the rest of you. I appreciate your presentations.

UNIDENTIFIED VOICE: Thank you.

CHAIRMAN ROSENTHAL: Thank you.

UNIDENTIFIED VOICE: Are you going to bring the whole panel up.

CHAIRMAN ROSENTHAL: You can bring the panel up here. There are five people, you each have two minutes. That's it. Time is moving.

MR. COPELAND: All right. Just quickly, the water's pretty much been addressed. I'm not going to go into that in great detail. You've heard of the damage that took place on the San Jose Water Company and to the Austrian Dam. By and large, the water companies performed very well. They were able to sectionalize their systems...

CHAIRMAN ROSENTHAL: Senator Morgan has a question for the person dealing with water.

MR. COPELAND: All right, following the earthquake...

CHAIRMAN ROSENTHAL: No, no, we don't have to go on with a long explanation. She has a question that she would like to ask the water person.

MR. COPELAND: Fine.

SENATOR MORGAN: I need some education in the role of the PUC in a situation that I was not aware of down there. When I was county supervisor, I used to deal with three water companies. As a result of the earthquake, I discovered there are about twelve little water companies, some representing as few as forty people that have sort of set up these little mutual assistance kinds of, mutual kinds of water companies. Is there a role for PUC to play in helping these groups get back together, perhaps coordinate and unite in one or two water companies. I guess I'm asking for help, very frankly, because while the San Jose Water Company does have their capacity back up to 100 percent, we still are without water in a few of the homes down there, what, three and a half months later because of the fact that there has not been money to rebuild some of the smaller ones. And I wondered if you could help me with anything...

MR. BOB PENNY: Senator, I am Bob Penny. I am from the Water Utilities Branch and a general answer is yes, we are active in that area. I noted in the earlier presentations that we spoke of San Jose Water and Cal Water Service, but it's been to our problem that there are a number of small companies in the area that suffered severe damage. In fact, in two companies, they were essentially destroyed. And they've had an extreme amount of difficulty in rebuilding their systems and coming back on line. The first was Mountain Charley Water Company and the other was Idylwild Water Company. There are a number of water companies in that area that are classified as publicly owned and mutual, or mutually owned. So, within an area of approximately five miles from the epicenter, there must be about maybe ten or fifteen small systems that serve, as you indicated, as few as 25 or 30 people, customers. Now, we found that the most significant problem after the quake was that there was not emergency money available for these small companies for emergency repairs. While next door were the publically owned, or mutual companies, there was government money there right away to help them restore their service. Now it took approximately a month or six weeks in some cases and, in one particular case, they are still not fully recovered from it to get service back and this has been achieved by a combination of things. Volunteer efforts on the part of the customers and some of the other systems in the area providing

manpower, actual grants of money from the customers themselves, or assessing themselves for facility construction and our participation, as much as we could, to make special rate adjustments as possible to accommodate these. The thing that happened with the Mountain Charley immediately was, of course, that they lost nearly all their storage. All their mains were damaged severely and they immediately looked for help to restore the tanks and they ended up making arrangements with tank suppliers in the area to bear credit to carry them until we could make some rate adjustments to pay for them in the long term but the immediate...

SENATOR MORGAN: So have you done that then?

MR. PENNY: Yes, we have. And....

SENATOR MORGAN: So that, what I really, I'm not totally familiar with it, but we've been working fairly closely down there, so I sort of know the problem. What I'm looking to is, you know, if Senator Rosenthal had a problem, what can his people with small water districts do to prepare for the future because you're right, the money wasn't available, the people don't have the money that were homeowner association kind of water companies, what should be happening to prepare other parts of the state for these kinds of emergencies.

MR. PENNY: Where we can do it, the answer is to—well, I would suggest as an answer some means to providing emergency funds for workers on site to do the work necessary to get the system back in operation as quickly as possible. That money was not available. It was a lot of confusion about what was available and who would supply it and it ended up a great deal of the work was done by volunteers, both the customers and people in the community.

SENATOR MORGAN: So you're suggesting we need to change the people able to receive FEMA money, for instance?

MR. PENNY: I would suggest explore that whole area because, as I indicated, the publicly owned systems right next door to certain people, their service was restored almost overnight, comparatively speaking, whereas the privately owned small systems, they couldn't get assistance.

They are troubled companies to start with. As you may know, these very small companies are under financed, they're marginal in operation to start with, and the problem is complicated by the fact that the system is very inadequately constructed with many of them to start with.

SENATOR MORGAN: Well, and I guess that's what I'm trying to get your professional opinion on, also. As somebody that has oversight in all these areas, you could say that this is an opportunity to force those who are inefficient, who perhaps are too small to be efficient, to join with their neighbors from regulatory perspective, is that what should be happening? I'm trying to get your recommendations.

MR. PENNY: One of the things we do as a routine when we're in contact with a small company, is to help them consider the formation of utility districts or mutuals to actually take over the operation. Unfortunately, we find the communities often are resistant to this when they find the difficulties involved in that, so it's a catch-22 situation. As a private entity, they can't raise the funds, they can't borrow them to make the improvements to the system, but on the other hand, they don't want to take on the headaches and problems of going through the formation of districts or actually forming the mutuals, but we have been historically helping in this because we know this is a solution. As a matter of side point, we've reduced the number of small systems in the state from 300 down to maybe half that number and we are acting very actively in that area to achieve that. Now, with the Mountain Charley system in particular, we have said to the community there that this is a good time for them to consider taking it over to form a district or to form a mutual. The system has imposed on itself a surcharge in money to do an engineering study of the feasibility of this and get the assistance from capable consultants that will tell him what the problems are and how they can address that, but it is a good time to address the formation of public entities and the joining of public entities, because we all know there are economies of scale in these type things and when you join these companies and entities together, you're going to have more propensity for handling these problems when they occur.

SENATOR MORGAN: Okay.

CHAIRMAN ROSENTHAL: Okay, will you introduce the next witness?

MR. COPELAND. Sure. Let me preface the electric and gas stuff and then I'll follow up with John Dutcher here.

CHAIRMAN ROSENTHAL: Okay.

MR. COPELAND: Some of the problems that we encountered during the earthquake that we've taken steps, I believe, to correct are--first is the role of the news media. By and large, the news media performed an admirable job. However, there were incidences where wrong advice was given. Some of

this came from the national news media and some it from the local news media. When they advised customers to immediately turn off their gas supply. As a result of that type of information, we held a meeting this month with all the gas utilities, and asked them to start to begin to consider better ways that we can reach the news media and the general public on what's the best way to address those problems. The utilities are to get back to us with an action plan on how that can be improved. So, hopefully, we will be on the way to doing that. The problem I had with that is what happens when people do shut off their meters and there happens to be a cold snap in January, for instance, and everybody began to relight their pilot lights and I think you can appreciate the problems that could happen to life if that were to occur. So we want to reduce the number of pilot lights to be lit.

Another lesson we learned from the quake is that the ground doesn't perform very well when there is liquifaction. And that's certainly indicated by PG&E. Part of the PG&E problem had to do with the fact that the lines that was in the Marina were old, cast-iron mains. Those lines have been identified by utility companies throughout the United States as in need of being replaced. Fortunately for PG&E, the rest of the cast iron mains in San Francisco performed fairly well. So our objective, then, is to identify throughout California, those areas that are subject to liquifactions. So we've issued letters to the utility companies asking them to provide that type of information to us and the assessment that that type of ground would have on their facilities.

Another area that we are interested in is the same area that you are. I'm glad to hear that you're going to be proposing legislation to deal with equipment found in electric switch yards. We've already taken action in that area to send out letters to the utility companies asking for data. It was our intention to follow that up with workshops throughout California on that so maybe it would be well if we could work in conjunction with you on this area. At least you would be informed of what we're doing.

Turning to the affect it has on services, then, I'd like to turn some time over and make it available to John Dutcher who can bring you up to date on what we've done in that area.

MR. JOHN DUTCHER: Thank you, Russ. Senator Rosenthal, Commissioner Duda. I guess I can introduce myself and then I'll cover my three points briefly and then we can go on from there. My name is John Dutcher, as Russ indicated, and I am in the Energy Branch of the Public Utilities Commission. Essentially, we have three things that we see as emerging somewhat after the immediate response to the

earthquake and those are, basically, to a certain extent, getting out of the way of the utilities so that they can perform as they should at the time of the event and one of those things that the Commission is considering is the preauthorization of balancing account treatment for extraordinary emergency expenses. This has some issues associated with it so at the present time it is being evaluated to make sure that it would be an appropriate measure to have in place.

CHAIRMAN ROSENTHAL: So that might be factored into the rates.

MR. DUTCHER: Yes, but the provision, as we're looking at it, is that it would require subsequent Commission action before it could go into the rates. In order to avoid retroactive rate making, we'd like to have something in place so the utilities can start accumulating the costs.

The second one has to do with what happens when emergency housing is set up and things like that where the rates can be established in such a way as to be as beneficial as possible for those customers without giving away the store. You have to balance the need for recovering expenses against what you can do for those customers.

CHAIRMAN ROSENTHAL: You're asking for flexibility in administrating those particular terms?

MR. DUTCHER: That's right, yes. And the third one is one that PG&E has but, and most of the other utilities in the state have but one utility is considering dropping and this is the voluntary benevolent program, such as Project Reach. Southern California Gas Company, in evaluating the low income rate assistance program, decided it was going to drop its gas assistance fund.

CHAIRMAN ROSENTHAL: They may change their mind, now, because of the earthquake.

MR. DUTCHER: Well, I certainly hope so. We've asked them to reconsider and we're waiting for their response.

CHAIRMAN ROSENTHAL: I'll ask them to reconsider, too.

MR. DUTCHER: Thank you very much, Senator, that's all I have.

CHAIRMAN ROSENTHAL: Thank you.

MR. COPELAND: Telecommunications, I think you heard the problem is not the equipment, but the overload. I have here with me, Mr. Bob Weissman from our Telecommunications Branch.

MR. ROBERT WEISSMAN: Senator Rosenthal, Commissioner Duda, I am Robert Weissman, Telecommunications Branch. Just a few items I will bring to our attention. First, we know that the

telephone system worked. There were some delays. We had blocking of calls coming in, so calls could get out. We knew the telephone companies were prepared. We've already heard about the high call volumes. The system actually, at times, handled calls from what I've heard of 40 or 50 percent more than what they normally would handle. The telephone companies, including cellular, provided assistance to police departments, cities, other emergencies. They provided free local calls from emergency centers. I think one thing that was very important that we found out, power is needed to put a telecommunications system. All the companies had backup power that will last for at least a 72 hour period and it's good to see that the telephone companies and the electric companies coordinated together to be sure that power was available when you wouldn't have backup, the commercial power was restored.

The last point I'd like to make is that the pay telephones that had power from the central offices worked. Those that had to rely on commercial power when commercial power went out, they did not work.

CHAIRMAN ROSENTHAL: Thank you very much. I guess the PUC's 1990 work plan indicates that the Commission will be providing the Seismic Safety Commission with a report in June, I guess, on the extent of the seismic safety readiness. Would you make certain that the Committee receives a copy of that report?

MR. COPELAND: I'd be glad to. We work very closely with the Seismic Safety Commission and we're trying to carry out their concerns.

CHAIRMAN ROSENTHAL: Okay, do you have another witness?

MR. COPELAND: Yes, I'd like to introduce Paul Wuerstle from our Transportation Division. He was involved with making arrangements for the ferry service in conjunction with Caltrans and I'll let him speak.

MR. PAUL WUERSTLE: Yes, good afternoon, I'm Paul Wuerstle, Transportation Division Staff. I'll just quickly mention three areas of response that we were involved with. One: The Commission promptly approved emergency supplemental ferry services to the East Bay, as previously discussed by the Caltrans representative. This was accomplished on October 20, which was the Friday after the quake. Secondly, Transportation Division staff met with the Metropolitan Transportation Commission, Caltrans and public transit agencies, on their post earthquake transit plan and we provided the transit agencies with a

list of our licensed passenger carriers who might be able to provide equipment should the public agencies need to augment their equipment. Third, we were also involved in taking steps to abate the operation of sightseeing tours in the disaster areas. Specifically, we conducted joint patrols with the San Francisco Police Department in the Marina District checking tour bus operators who were operating through that area and stopping their activities. Secondly, our Commission President, President Wilk, issued a press release warning tour bus operators to stay away from these areas and to avoid interfering with relief recovery and rebuilding efforts. Third, the Director of Transportation sent a letter to approximately 500 of our licensed passenger carriers in the ten surrounding counties advising them to stay away from San Francisco's Marina District and finally we contacted law enforcement agencies in Santa Cruz and Monterey Counties just to let them know we were available to assist them if they were having difficulties with tour bus operators.

CHAIRMAN ROSENTHAL: You also regulate BART?

MR. WUERSTLE: The Commission regulates BART safety, yes.

CHAIRMAN ROSENTHAL: BART safety, any comments?

MR. COPELAND: I'll try to address that for you, if you like. As far as BART safety, it, as you are quite aware, they have already plans into effect on what to do in case there is an earthquake. They shut their system down and investigate it. Our people were involved in that kind of analysis. Several things that we looked at at the time, as reported, there was a small leak in the tube. That leak has been fixed with pressure grouting and that's not uncommon to that system, that's happened before.

There was an area that we were concerned about, had to do with the aerial transition structure. That's the one that just comes out of the tube area and rises on to the high rise section, there by the Oakland West station. That section of the system was, it sustained pretty heavy damage. It was reinforced then and it remains that way now and plans are to correct that in the coming year. That's about all I can tell you. Oh, the other thing that was of concern was the structure that goes across the Coliseum--Bart Station to the Oakland Coliseum, that structure was damaged and it has been repaired. If there are any other questions, I can...

CHAIRMAN ROSENTHAL: That's fine. I would like to thank you very much for your presentation.

MR. COPELAND: Could I take one more time. I know time's late, but there is an item here that our railroad people would like to get before you, if I could.

Our railroad people at the time the earthquake took place, stationed their people in the Sacramento field office we had, and then dispatched people to the various dispatching offices in Roseville and Sacramento. One of the things that became quite apparent to us and has been addressed here by the various other speakers was the inability to communicate. So I would encourage consideration for state agencies that has to deal in these type of matters that mobile network telephones be a consideration and be funded for all state agencies, not just our own.

One other incidence I think should be addressed by the Committee happened to be at the request of Caltrans, there was a request to use our railroad assistance to transport passengers in the quake areas there around the Watsonville area, I guess it is, and Santa Cruz area on an emergency basis. Those plans went into effect and were very successful but later on was dropped by the railroad companies themselves on the fear of not having adequate insurance to cover any losses in case something should occur. So that should be a concern that you may be able to address for us.

CHAIRMAN ROSENTHAL: Thank you very much. Commissioner Duda, before we go to the open microphone, do you have any comments you'd like to make.

COMMISSIONER FREDERICK R. DUDA: Yes, Senator, I have a question. When will the next quake occur above seven, seven point one magnitude.

CHAIRMAN ROSENTHAL: The next one may be eight.

COMMISSIONER DUDA: The next one may be eight. Ivan Browning, a consultant from the University and private group in Albuquerque, New Mexico, spoke at the National Association of State Utility Regulators in Boston this last year in 1989 and he predicted a major earthquake for California for December 3 of this year. I hope he's wrong. The problem is none of us can predict when the next quake of a major nature will occur. I think our responsibility, Senator, here at the Commission, as citizens of this state, we choose to live and work here, is to join in a statewide effort, hopefully coordinated and participated in by the state, all of its departments, the counties, the cities and every local group that can offer help and assistance to have a three point program. I think we need to really beef up our educational preparation. I think it has to address every aspect of what it takes to know about and prepare for the

earthquakes that we know are coming. I think we've done a marvelous job of doing planning and preparation to date, but I think we have still a lot more that we can do to make sure that the response to the quakes are as effective and coordinated. Communication certainly is a key and I think we're going to have to spend more money, dig in our pockets and have more money to make sure we can communicate and know who to communicate with. And finally financial--I think because we choose to live and work here, it is our preferred place, I think we're going to realize we have to make a financial commitment to making sure we are secure and prepared. Thank you, Senator.

CHAIRMAN ROSENTHAL: Thank you. Do you have enough staff to do all those things?

COMMISSIONER DUDA: We may need a few more.

CHAIRMAN ROSENTHAL: Okay. Thank you very much, panelists. We now have three persons who would like to make a comment at the open mike. John Darby will substitute for Bobbi Redinger, the Hearing Society for the Bay Area, and if you will make a short statement please.

MR. JOHN L. DARBY: Senator, thank you, I am John L. Darby, Executive Director, Hearing Society for the Bay Area. A member of my staff had planned to be here but she had another commitment so I was substituted quickly.

Senator, Commissioner, Mr. Fadelli, staff, I thank you very much. I would really like to thank you for your question relating to the TDD service. I regret that most representatives of the telecommunications industry have already left. Mr. Mayfield's response to you related to the operator services for the deaf in--services for the deaf in the Oakland building, which went off for three hours, right. Your question was about the relay which he did not respond to and, actually, that was a major breakdown in terms of services for deaf people. The relay, by policy, can only transmit messages and it is located in Woodland Hills. People with TDD's in the Bay Area, could call the relay only to make another call. The relay, by policy, the operators were prevented from giving any information to the deaf people calling in seeking information. There is no, apparently there is no provision for an emergency change to those regulations with the relay.

CHAIRMAN ROSENTHAL: The Committee will be following up and asking those questions.

MR. DARBY: Good. Because you see the telecommunications industry testified that return calls to the Bay Area were, in fact, blocked. So that the people from relay services, needing the relay services

would call south, but they couldn't get back north to complete the call that they needed. Also, Senator Morgan keeps referring to the radio as a sort of first line of defense, so to speak, but that radio is unavailable to at least 200,000 deaf Californians, plus another probably 200,000 near deaf.

CHAIRMAN ROSENTHAL: You're right.

MR. DARBY: Technology does exist. It is not yet used to for a modem kind of device between a portable radio and a TDD which could give very fast information to people relying on visual means for that information, so that is something that needs to be looked at very carefully and as a substitute for emergency services. Also, there is one major problem with the Deaf and Disabled Program at the present time in the provision of TDD's, the implication is that all TDD's, by being plugged in, that the batteries are automatically recharging. That is not necessarily true. With most TDD's, the batteries have to be recharged separately and the average TDD user is not aware of that. Therefore, they thought they had a battery backup and they didn't because they didn't realize that charging of the TDD is separate from just having the plug into the wall to use it on a daily basis.

CHAIRMAN ROSENTHAL: How do we inform them?

MR. DARBY: I think that it is very important that the Deaf and Disabled Program be instructed to inform people the difference between using it on line and charging it and that is not clear in the present instructions. We have written testimony but I will leave that with you and thank you very much, Senator.

CHAIRMAN ROSENTHAL: Thank you, sir. Next, Janet Clark, on the Mayor's Council on Disabilities.

MS. JANET CLARK: I'm sorry that I don't have anything to hand you to read.

CHAIRMAN ROSENTHAL: That's all right.

MS. CLARK: But in serving the community, myself, as a volunteer, I wear several hats. I'm with the Mayor's Council on Disability Concerns, I'm with the BPW Taskforce on Handicapped Advisory, I'm on the 504 Commission trying to get everything built back to where it should be with the disabilities. I'm also a retired registered nurse. And the disabled community knows me. A lot of the people called me after the quake for services that they could not get.

If you are living in a senior citizen or disabled housing unit, you're usually living in a place that is built solid, many stories high, and if you live above the ground floor, you're out of luck. You're trapped in

that building. Now being trapped in that building isn't a bad thing if you have your water and that, and we've been trying to teach the disabled community to carry their own earthquake survival kits, but we need to have the public utilities aware that they have to get those buildings on electrically as fast as they get a hospital, a jail, a nursing home or any of those kind of facilities. Because inside those buildings are senior citizens using respirators, disabled people that have to have an electric lift to get in and out of bed, in and out of the bathtub, or in and out of any facility they want to use, that need special chairs. Those of us need our chairs charged up. If we were living in those kind of units, we were out of luck. We had no transportation. It is a need of the disabled and senior citizen community to have electricity restored to those buildings as fast as possible.

The street lights and fire--your street lights and your stop signs and that were back on line and those places sat--I got phone calls for days after, when are we going to get our electricity, we can't carry gasoline up there for that generator any more. We can't climb those stairs with batteries to supplant what they have. We need it and this is one time when I hear them talking about how well they did. They're patting themselves on the back and they should be kicking themselves a little further down for forgetting the disabled and the elderly.

Thank you.

CHAIRMAN ROSENTHAL: Thank you for your testimony. As part of the record, I hope that they will also read it and realize that there are a number of things we need to do more. Jim Thompson, GTE.

MR. JIM THOMPSON: Good afternoon, Senator Rosenthal, Commissioner Duda, Committee. My name is Jim Thompson. I am the Business Implementation Manager for GTE California and I would like to provide some input today based on the prehearing information that had a question about whether or not there is a need to extend some of the legislative activity in the satellite emergency communications requirement. I think we heard this morning from the local government entities just how critical the telecommunications capabilities are in responding to any kind of an emergency requirement such as this. We also heard how the telecommunications performed. I think we heard that the systems did not go down, that there was no plant or facility injury, excepting one building that was talked about in Oakland. We also found that even though the systems didn't go down, many of the local governmental personnel went to the cellular telephone as an alternative capability because the public switch network was

blocked with congestion. And I have to agree with Mr. Imbrecht, the Energy Commission person, who said that although this was a devastating happening, it was a minor event in the way in which their planning for the major 7.5 plus. And I think, therefore, we as just residents of the state of California and, in fact, participants in the telecommunications industry, should feel that we were very lucky on this pass that the epicenter wasn't right next to a major central office.

CHAIRMAN ROSENTHAL: Are you speaking as a private citizen, or are you speaking on behalf of GTE?

MR. THOMPSON: I'm speaking on behalf of GTE.

CHAIRMAN ROSENTHAL: Well, they made their presentation. I'm trying to figure out what you're adding.

MR. THOMPSON: I'm attempting to address the area of satellite emergency services legislation and the need for it that was not covered.

CHAIRMAN ROSENTHAL: Oh, satellite, okay. You didn't mention that. You were talking about some other things, I didn't know where you were.

MR. THOMPSON: Oh, I thought I began with that. But, at any rate, that's what I'm interested in. I'm interested in having that considered as perhaps an extension to what was found in the cellular application as something that was very valuable. It turned out that cellular was an alternative to the public switch network and it was very valuable.

CHAIRMAN ROSENTHAL: You're talking about a state satellite system as a further backup?

MR. THOMPSON: Yes, an application of satellite that would even enhance further the cellular utilization. What we're really talking about here is just some additional alternative to the public switch network.

CHAIRMAN ROSENTHAL: Okay. I think there is some legislation in dealing with it. I don't know where it is or what's happening to it. Probably will be some further discussion in the Legislature about that.

MR. THOMPSON: I have had conversations with people in OES about some investigations that they're doing, and when that legislation that was in process was introduced, the technology that was considered at that time as the application, that's two year old technology now and I think that the OES folks have looked at cellular applications that link to...

CHAIRMAN ROSENTHAL: I see.

MR. THOMPSON: ...satellite opportunities and that kind of an application really needs to be pursued to enhance the capability for the OES and others to respond to emergencies.

CHAIRMAN ROSENTHAL: Okay. It seems to me that whatever we do in that area, two years from now, that should not be obsolete.

MR. THOMPSON: Well, we would hope that we would at least select a technology that fits for the time and we wouldn't wait for the optimum. We could wait forever and not have an action mode.

CHAIRMAN ROSENTHAL: Thank you, Mr. Thompson. And the last person, William Loran.

DR. WILLIAM LORAN: I'm a retired dentist and dental professor. My name is William Loran and I'm speaking as a private citizen. However, in my work as a dentist, I'm very familiar with the damage that ionizing radiation can cause. We take all kinds of care, we line walls with lead, we cover the patient with lead aprons and everything else. So I'm concerned about radiation. And here's what I wrote and I'll read it off. If you want copies, I'll give you the copy later.

CHAIRMAN ROSENTHAL: How long is it?

DR. LORAN: Oh, it's just part of a page.

CHAIRMAN ROSENTHAL: Okay, fine.

DR. LORAN: It is wonderful that you are reviewing the utility problems which occurred during the October 17th quake. I'm impressed. Fortunately for the people of California, there was no escape of nuclear material during that time. I say "fortunately" because a traveling radioactive plume would be the most serious by far of all threats to life and the environment. Radio nuclear has the deadliest of all toxins. Exposure to them causes chromosome damage, invites cancer and early death and defective births. I beg you to take preventive action. Ask the U.S. Geological Service and independent seismologists to calculate the maximum shake possible based on the findings of the Loma Prieta quake, then ask structural engineers if nuclear fuel could be released to the environment in such a shake. Hear experts who are not employed by the utility.

CHAIRMAN ROSENTHAL: You may not have been here. I asked questions concerning one of the nuclear plants in terms of its safety committee.

DR. LORAN: Oh, I'm sorry I missed it.

CHAIRMAN ROSENTHAL: Okay, so we did speak about that subject matter and we're going to look further into it as we get information back that we've asked for.

DR. LORAN: May I finish, though?

CHAIRMAN ROSENTHAL: Oh, I thought you were finished.

DR. LORAN: If the possibility exists that nuclear material could escape, the plants must be decommissioned. The financial loss is a minor consideration weighed against the millions of lives at risk.

I urge you to call a special hearing on this subject. Bring an end to the peril posed by nuclear power and weapons plants in our increasingly active earthquake zone. Removal of this danger may become the most heroic act of your careers.

CHAIRMAN ROSENTHAL: Thank you very much. Let me just conclude by—we don't have everybody here who participated. I just want to say that hopefully it won't require another disaster to learn to do something about the lessons which we learned as a result of that San Francisco earthquake and I want to thank those of you who took your time to be here, share your experiences and the thoughts and with that our session is adjourned.

California Legislature

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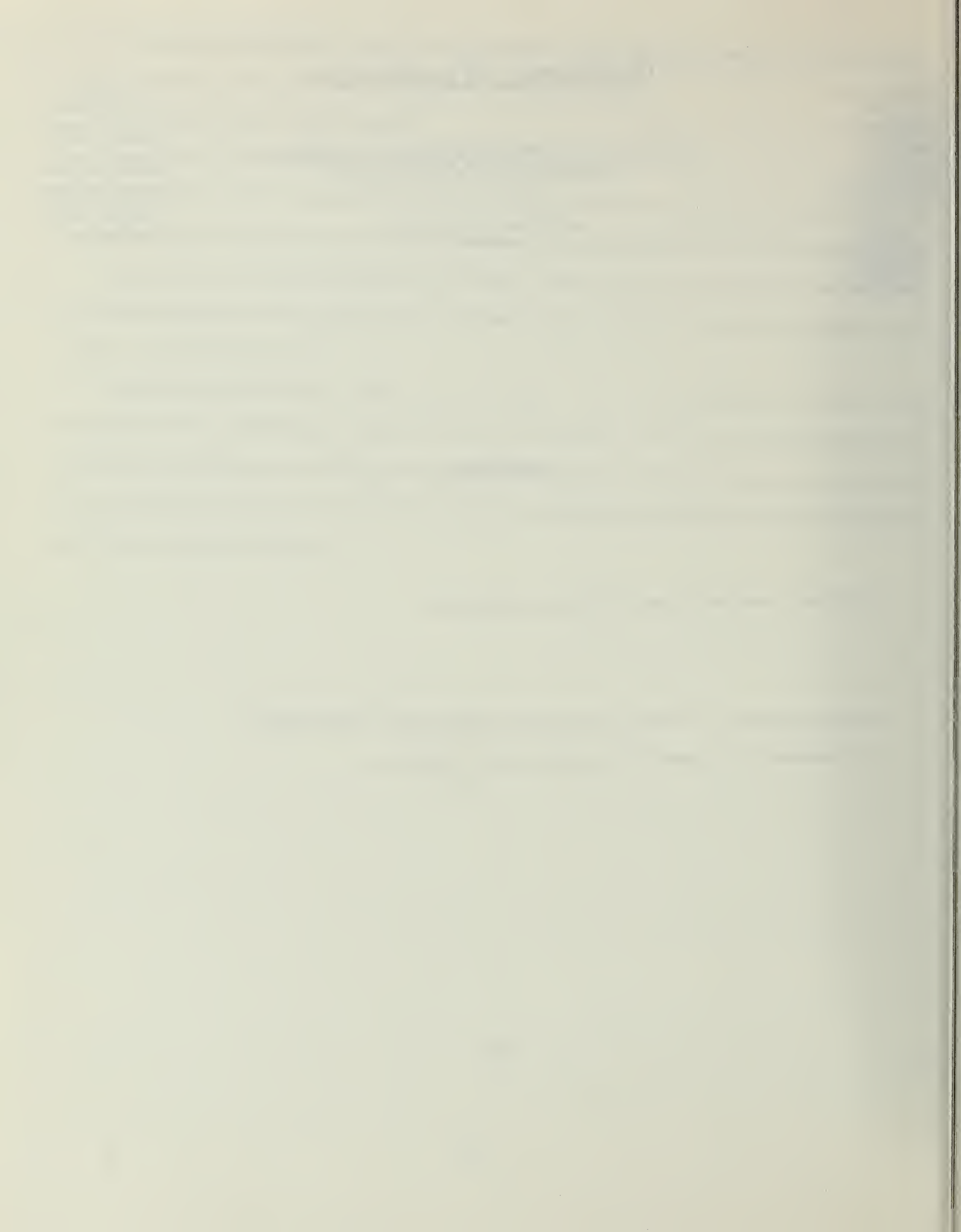


APPENDICES

Written testimony by various witnesses

Senate Energy & Public Utilities Committee Memorandum
to Members in connection with this hearing

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City of Santa Cruz

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SANTA CRUZ, CALIFORNIA 95060
PUBLIC WORKS DEPARTMENT
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February 2, 1990

California Legislature
Senate Committee on Energy and Public Utilities
Senator Herschel Rosenthal, Chairman

Subject: Written testimony for February 2, 1990 hearing on
the Loma Prieta Earthquake's impact on public
utilities; Public Utilities Commission, S.F.

To the members of the Senate Committee on Energy and Public
Utilities:

On behalf of the Honorable Mayor Wormhoudt of the City of Santa
Cruz, I would like to take this opportunity to thank the Senate
Committee for the invitation to the hearing to discuss the Loma
Prieta Earthquake's impact on the City as it relates to Public
Utility services.

I would also like to take this opportunity on behalf of the City
of Santa Cruz to extend sincere appreciation and thanks to the
Utility Companies, particularly Pacific Gas and Electric Company
and Pacific Bell, for their responsiveness to the community from
immediately after the earthquake and through the several weeks of
continuing efforts in working with the City Administration in the
ensuing emergency. Their efforts and responsiveness were key
components in the City's ability to respond to the many emergency
situations with true effectiveness.

A brief outline of the City of Santa Cruz emergency response plan
would be helpful to discuss, in conjunction with the coordination
efforts of the City and Utility Companies.

The City employs an emergency response plan premised on the
Incident Command Structure, whereby an Emergency Operations
Center (EOC) is mobilized for coordination of disaster response
with the County of Santa Cruz EOC. This is our link with the
State Office of Emergency Services for resource needs
identification, allocation, and dispersement.

At a level 3, response, the most severe disaster response, an
Incident Command Structure is established at a remote site from
the City Hall complex to allow for direct communication from the
same facility for all members of the City organization.

From this Command Center, Fire, Law enforcement, Public Works,
Planning, Finance, and other department personnel, in

Within 30 minutes of the earthquake on the 17th of October, the Command Center was staffed and functional, with Fire, Police and Public Works field teams already having been dispatched to respond to the ensuing structure collapses, fires, utility disruptions, bridge and other infrastructure assessments, and the like. The emergency operations center continued in operation for seven days following the initial earthquake, and then was disassembled strategically to allow for a return to more normal City operations. Concurrently, a response command center was established in the downtown area to continue with damage assessment, controlled access for businesses and residences, demolition of structures, and related activities.

Several specific questions were raised for discussion in the letter sent from the Senate Committee to the Mayor, which I will briefly discuss herein.

1) How did the utility companies respond immediately following the quake?

In general, the response by the utility companies was excellent in conjunction with the City's response efforts.

Key examples are cited below.

Communication links from the City EOC to the County EOC include, in addition to phone line communication, all Fire and Police local radio frequencies, in addition to Amateur radio frequencies links between the EOC's.

Pacific Bell has a pre-arranged priority list of phone numbers that are checked and serviced as first priority, including the phone lines for the EOC centers, key governmental facilities, and the management personnel who are responsible for staffing the Emergency Operations Center.

Telephone line communication, although initially sporadic for the first few hours, was back in near full operation at these prioritized numbers within the first several hours of the initial earthquake strike. The predominant difficulty with the phone communications did not have to do with damaged lines, but had to do with overloaded circuits. Pacific Bell has informed us that they are working to have dedicated trunk lines for the Emergency Operations Centers in the near future, which will be of great benefit in overcoming the overloaded circuits that are associated with disasters such as the earthquake.

By design, Pacific Gas and Electric Company staffs the County EOC, so that direct communication and response can be provided to coordinate gas and electrical breaks and outages.

The City requested staffing at the City EOC by PG&E, and by the following morning, that staffing was provided, which greatly enhanced our ability to coordinate for Electrical and Gas service disruptions within the City limits.

2) Did they restore services to customers in a timely manner?

Regarding timeframe of service restorations, PG&E did an excellent job of restoring service in a timely manner.

Of the approximately 22000 customers in the City of Santa Cruz service area for PG&E, PG&E reports that virtually all services were disrupted initially by the earthquake. Within 24 hours of the event, PG&E had restored approximately 80% of the services in the City limits, and within 48 hours of the event, service restoration was 100%.

There are approximately 17000 gas customers within the City of Santa Cruz PG&E service area. PG&E reports that approximately half of the services went down as a result of the earthquake, and required relighting. Approximately 95% of the gas services requiring relighting were accomplished within 7 days of the event, and the remaining 5% were accomplished by the 14th day after the quake.

PG&E had supplemented their Coast division staffing levels by twofold, bringing in employees to respond to the emergency from Stockton, Sacramento, Fresno and Santa Rosa. In addition, 6 other utility companies were brought in to supplement PG&E personnel to respond to the demands.

Pacific Bell reports that virtually no out of services were caused by the earthquake. The primary difficulties of sporadic service through capabilities were caused by overloaded circuits. To the best of my recollection, within approximately two days after the earthquake, sporadic inability to communicate by normal phone operations had significantly subsided, and in the interim, the City had secured several cellular phones for emergency

personnel, in conjunction with dozens of additional hand-held portable radios with police, fire, and public works frequencies, so that more effective communications could be realized. The vendor that supplied the equipment was Cellular One of Santa Cruz and Motorola corporation.

3) Were their emergency procedures effective, and how were those procedures coordinated with those of your community?

It is my opinion that the emergency procedures and response by the utility companies were very effective, particularly in light of the magnitude of the disaster and its impacts upon the City. The coordination efforts with the City were decisive, and PG&E and Pacific Bell were very responsive to the impending needs of our emergency situation.

It should be noted that the emergency coordination efforts with the City and the utility companies continued for several weeks following the initial earthquake. By October 26, the City had initiated demolition of structures that had been deemed life-safety threats, and continued demolition activities into the month of January, 1990.

During the course of this time, 31 commercial structures and 34 residential structures were demolished, all on fast-track schedules. Each of the demolitions required close coordination with the utility companies to assure disconnection of gas, electrical, telephone and cable services. That coordination effort was accomplished with a "task force" of utility company representatives from PG&E, Pacific Bell, and Santa Cruz Cable TV.

The responsiveness of the utility company representatives and dedication to serving the fast-developing daily and sometimes hourly needs of our demolition activities, are to be commended.

Those utility systems not yet mentioned include wastewater treatment facilities, wastewater collection systems, water treatment facilities, water distribution systems, and stormwater drainage and flood protection systems. All of these particular systems are owned and operated by the City of Santa Cruz, and the emergency assessment and repair of said facilities are a part of the emergency preparedness plan that the City employs. Functioning of these systems remained virtually uninterrupted due to use of back-up generator systems at the plants, generators at lift stations, and employment of temporary measures at mainline and trunkline break locations, such as bypass systems and isolation of lines during repair work.

page 5.

4) What, if any, changes would you make to be better prepared for future disasters?

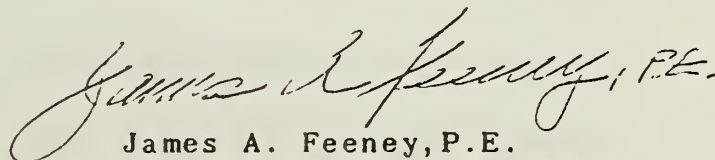
As it relates to the utility companies, the most effective change that could be made would be to have, within our Incident Command Structure, immediate on site representation by the utility companies at our City Emergency Operations Center.

During the course of the first several hours immediately after the earthquake, there was a degree of difficulty in coordinating with the utility companies in that we initially had no on-site representation. Although that representation existed at the County EOC Center, it would have proven valuable to also have utility company staff operating from our command center so that duplicating efforts in responding to the know "hot spots" could be greatly reduced.

We have initiated discussions with both PG&E and Pacific Bell, and they are in agreement that our respective emergency response plans should be and will be modified to reflect this necessary change.

I would like to thank the Senate Committee on Energy and Public Utilities for the opportunity to provide these observations and comments, and hope that they will be of use in the Committees' deliberations.

Respectfully Submitted,



James A. Feeney, P.E.
Assistant Director of Public Works

cc. Mayor Wormhoudt
City Manager
Director of Public Works

File No. 100-20;

TESTIMONY FOR STATE ENERGY AND PUBLIC UTILITY COMMITTEE:

UTILITY SERVICES:

GAS, ELECTRIC, AND TELEPHONE SERVICES WERE DISRUPTED EITHER THROUGHOUT OR IN PARTS OF THE CITY BECAUSE OF THE OCTOBER 17TH EARTHQUAKE. THE HARDEST HIT AREA, THE MARINA, SUFFERED A LOSS OF GAS SERVICE, PRIMARILY DUE TO THE AGE OF THE INFRASTRUCTURE. PG&E REPLACED APPROXIMATELY ELEVEN MILES OF GAS LINES IN THAT AREA. THERE WERE PROBLEMS WITH GAS FACILITIES IN OTHER PARTS OF THE CITY, HOWEVER, MOST WERE MINOR AND QUICKLY REPAIRED.

THE SHORTAGE OF ELECTRIC POWER WAS CITY-WIDE. IT WAS REPORTED THAT PG&E RECEIVED ASSISTANCE FROM THE NAVY IN GETTING ONE OF THEIR FACILITIES RESTARTED. THE RESULT WAS THAT ALL BUT THE NORTHEASTERN PORTION OF THE CITY HAD ELECTRIC POWER RESTORED QUICKLY. THE NORTHEASTERN PART OF THE CITY WAS THE LAST, HOWEVER, MOST, IF NOT ALL, PARTS OF THE CITY HAD POWER BY THE WEEKEND.

TELEPHONE SERVICE WAS DISRUPTED, BUT NO MORE THAN WAS TO BE EXPECTED. IT IS MY OPINION THAT IT WAS RESTORED IN FAIRLY QUICK ORDER.

WATER DEPARTMENT SERVICES WERE INTERRUPTED IN VARIOUS LOCATIONS. AGAIN, THE MARINA DISTRICT WAS THE MOST HEAVILY DAMAGED DISTRICT. THE AGE OF THE INFRASTRUCTURE, COMBINED WITH THE SOIL CONDITIONS, CONTRIBUTED TO THE PROBLEM.

OUR SEWERS CAME THROUGH THE EARTHQUAKE IN FAIRLY GOOD SHAPE. THERE WERE BETWEEN 30 AND 40 LOCATIONS WHERE WE HAD DAMAGE. MOST ARE IN THE PROCESS OF BEING REPAIRED. WE ARE CONTINUING A T.V. SURVEY OF THE SEWERS TO LOOK FOR FURTHER DAMAGE.

THE STREET LIGHTING SYSTEM WAS SOMEWHAT DISRUPTED. AGAIN, IT HAS ALSO BEEN REPAIRED.

ONE OF MY CONCERNS WITH REGARD TO THE UNDERGROUND UTILITIES IS JUST THAT - THEY ARE UNDERGROUND. I EXPECT THAT WE WILL CONTINUE TO SEE MORE FAILURES SUCH AS THE THREE THAT HAVE OCCURRED IN THE WATER SYSTEM SINCE THE EARTHQUAKE AS THE WINTER SEASON

PROGRESSES. IF WE HAVE HEAVY RAIN STORMS, WHICH CAUSE FOR INCREASED FLOW IN OUR SEWERS, THEN WE MAY EXPERIENCE MORE DISRUPTION TO THE SYSTEM. I THINK SOME OF THE FEATURES THAT CONTRIBUTE TO THE FAILURE OF THE UNDERGROUND UTILITIES INCLUDE (A) THE AGE OF THE FACILITIES, (B) THE "SETTLING IN" OF THE SOIL AFTER THE INITIAL EARTHQUAKE AND, (C), THE TECHNOLOGY THAT WAS USED WHEN SOME OF THE OLDER LINES WERE BUILT.

THE RESTORATION OF SERVICES, ESPECIALLY IN THE MARINA DISTRICT, WAS, TO MY MIND, A PROJECT THAT THE CITY AND UTILITY COMPANIES CAN BE PROUD OF. INITIAL PROJECTIONS, YOU MIGHT RECALL, INDICATED THAT EVEN IF CREWS WORKED AROUND THE CLOCK, IT MIGHT BE JANUARY BEFORE GAS AND ELECTRICAL SERVICES WERE RESTORED. AS A MATTER OF FACT, PEOPLE WHO LIVED IN HOMES THAT WERE SAFE TO ENTER WERE ABLE TO COOK THEIR THANKSGIVING DINNERS AT HOME AND NO CREWS HAD TO WORK THE MIDNIGHT TO 6:00 A.M. SHIFT. I AM PLEASED TO SAY THAT I APPOINTED MY ASSISTANT TO TAKE CHARGE OF THE MARINA RESTORATION PROGRAM AND THAT, THROUGH HER ORGANIZATION, IT WAS A SUCCESSFUL PROJECT DRAWN TO A CONCLUSION. AT THE PRESENT TIME,

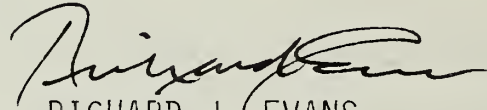
WE ARE REPAIRING STREETS AND SIDEWALKS IN THE AREA AT THE FINAL PHASE OF THE RESTORATION WORK.

I HAVE BEEN ASKED TO COMMENT WITH REGARD TO THE USE OF THE EMERGENCY BROADCAST SYSTEM. I THINK INITIALLY THERE WERE SOME PROBLEMS GETTING INFORMATION TO IT. YOU MAY BE AWARE THAT OUR EXISTING EMERGENCY OPERATIONS CENTER DOES NOT HAVE THE BEST FACILITIES TO MEET THE NEEDS OF THE CITY. AS A MATTER OF FACT, WE HAVE PLANS TO IMPROVE THE CENTER. THESE PLANS WERE DEVELOPED PRIOR TO THE EARTHQUAKE. THE EXPERIENCES DURING THE EARTHQUAKE EMPHASIZE THE NEED FOR CORRECTION AND HAVE PROVIDED GOOD INSIGHT AS TO WHAT IS NEEDED.

I HAVE BEEN ASKED TO COMMENT ON THE TRANSBAY TRANSPORTATION ARRANGEMENTS THAT WERE MADE AFTER THE EARTHQUAKE. THIS IS NOT IN MY JURISDICTION, HOWEVER, WE DID ASSIST THE PORT IN PROVIDING SOME TEMPORARY PASSENGER FACILITIES AT THE FERRY LANDING POINTS. I UNDERSTAND THERE HAVE BEEN REPORTS MADE WITH REGARD TO CONFUSION. THE PEOPLE THAT I HAVE SPOKEN WITH WERE VERY PLEASED THAT THE FERRY SERVICE WAS PROVIDED.

I WOULD BE PLEASED TO ANSWER ANY OTHER QUESTIONS THAT I CAN.

THANK YOU FOR YOUR ATTENTION.



RICHARD J. EVANS
DIRECTOR OF PUBLIC WORKS

SENATE ENERGY AND PUBLIC UTILITIES COMMITTEE

Informational Hearing
on
October 1989 Earthquake:
Impact on Public Utilities

Statement of Dennis K. Ostrom,
Southern California Edison Company

Friday, February 2, 1990
Public Utilities Commission Building, Auditorium
505 Van Ness Avenue, San Francisco

Good morning Chairman Rosenthal and members of the Senate Energy and Public Utilities Committee. My name is Dennis K. Ostrom and I am the In House Earthquake Engineering Consultant of the Engineering Planning and Research Department for the Southern California Edison Company.

I am pleased to be here on behalf of Edison. I plan to present our involvement in the Loma Prieta Earthquake crisis, our assisting role in the restoration of electric service and what impact the earthquake has had on our own emergency procedures.

The Loma Prieta Earthquake occurred at 5:04 p.m., Tuesday, October 17, 1989. Within one hour, the Edison energy control center was communicating with its Pacific Gas and Electric (PG&E) counterpart. Further communication between Edison and PG&E did not occur until Wednesday morning.

Edison corporate headquarters next contacted PG&E corporate headquarters at approximately 8:00 a.m., Wednesday morning. The purpose of the contact was to determine "how Edison could assist PG&E." Edison made offers of material and personnel assistance. PG&E declined assistance at this time.

Approximately one hour later, PG&E contacted Edison with a request for material. Edison was able to provide a requested 500kv circuit breaker. The circuit breaker was loaded on Edison trucks and by Wednesday afternoon was dispatched along with an engineer and a technician to PG&E. The Edison personnel were finished and returned three days later having installed the circuit breaker and familiarized PG&E personnel in its use.

PG&E made no more requests of Edison. However, Edison did send engineers to visit damaged PG&E facilities and has been communicating with PG&E technical personnel about their observations. This follows along in the same spirit of PG&E sending their personnel to Edison sites after the recent earthquakes that have occurred in Southern California.

It is too early to assess the ultimate impact the earthquake will have on Edison's emergency procedures. Edison is following PG&E's experience very closely and will incorporate all new lessons into its emergency procedures. Please also be aware that Edison's study of this earthquake is far from over.

Presently, the Loma Prieta Earthquake has had no significant impact on Edison's own emergency procedures and we are not considering any changes at this time. This should be

no surprise, two significant earthquakes have recently occurred in our own service territory which provided Edison with a lot of valuable experience.

Edison has factored its own experiences into its current emergency procedures. The emergency procedures address communication within the Company and with key components of society outside of the Company, access to key Edison personnel, and preservation of central or subsystem functional control. We believe that good emergency procedures are essential for an expeditious recovery following an earthquake.

Eventually, PG&E experiences during this earthquake may be factored into Edison emergency procedures. The experiences of PG&E during and after the Loma Prieta Earthquake are looked upon as valuable learning experiences by Edison and will be studied as such for many years to come. Studies about the performance of PG&E facilities to the Loma Prieta Earthquake involving Edison and PG&E personnel are underway already.

Thank you for the opportunity to provide testimony at this hearing.

INDEPENDENT ENERGY PRODUCERS ASSOCIATION
and the
CALIFORNIA COGENERATION COUNCIL

Statement for the
SENATE COMMITTEE ON ENERGY
AND PUBLIC UTILITIES

Hearing on the October 1989 Earthquake
Impact on Public Utilities

Friday, 2 February 1990

Good morning Senator Rosenthal, members of the Committee, my name is Jim Leahy. I am representing the Independent Energy Producers Association and the California Cogeneration Council, two of the predominant trade organizations of the QF and independent generation community.

We believe that you will hear today of truly extraordinary performance on the part of local government, local and state agencies and the utilities during the earthquake and its aftermath. In fact, one of the reasons I am pleased to be here today is to express our admiration and thanks to your panelists.

It is gratifying to be able to report to you that the independent generators within the quake-affected area also played a positive role in responding to that disaster. Our members worked in close partnership with PG&E to help overcome the disruptions to the electric system and its customers caused by the earthquake.

Eleven of our generators are scattered within a radius of about 60 miles of the epicenter. These facilities are located in such places as King City, Gilroy, Santa Cruz, San Jose, Santa Clara, Stanford and San Francisco. They represent an aggregate capacity of over 350 megawatts. More than 280 of the 300 megawatts on-line at the time of the quake either continued operating throughout or tripped due to system transients and came back up within one or two hours. The balance returned to service over the following two days. None suffered any notable damage.

I've cited these figures because they illustrate a point. The State of California, for about the last decade, has fostered the creation of technically and geographically diverse generation within the electric system. The theoretical benefits of such a policy include a decreased likelihood of losing large blocks of generating capacity to a single event and increased transmission system resilience resulting from the dispersal of generating facilities throughout the area served. Those whom I represent here today took the risks and invested the resources to help test these theories. This appears to be the first case where the promise of these benefits was actually realized.

It is, no doubt, clear that we are proud of our performance during and after the earthquake. To put all of this in perspective, though, our members simply worked to fulfill their roles as quality suppliers of electricity to PG&E. It was, of course, the utilities who had the nearly overwhelming task of restoring service to the customers. To that end, coordination and communication between PG&E and our various facilities was quite good. Nearly all independent generators in the area operated under frequent and extensive special instructions from PG&E during this period.

The facility for coordinating independent generating units with the utility system is contained within each of our Power Purchase Agreements. Our members and the utility conduct normal day-to-day operating coordination through the local PG&E switching centers. And, though at a much higher level of intensity, this mechanism served reasonably well during the earthquake.

Did the "system" work? By nearly any measure we believe that one would conclude that it did work.

Could the emerging partnership between independent generators and the utilities improve its ability to respond to widespread emergencies? Certainly it could.

There is much to gain from this dearly obtained experience. We are beginning to take steps to share the lessons each of us has learned. There is always room for improvement of coordination, communication and planning for the hundreds of things that didn't happen this time. None of us can tolerate complacency. Our members are committed to working with the utilities to help assure that both of us are better prepared for the possibility of future emergencies.

In closing, we believe this experience forcefully portrays the inherent value in the State's policy of encouraging decentralized generating facilities. We are confident that applying our newly acquired experience will enhance that value.

Finally, I note that our membership includes a wide variety of technologies; wind, geothermal, biomass, and so on. I fully expect that some time in the future there will be occasion to point to actual experiences which show that characteristic of our group to be of equally great worth to the State of California.

PREPARED TESTIMONY OF
JAMES J. BUTLER, JR.
BUSINESS AND GOVERNMENT AFFAIRS
GTE MOBILNET - PACIFIC REGION

GTE Mobilnet would like to thank the Senate Energy Committee for allowing us to participate in its earthquake preparedness efforts. Cellular telephony is unique in that it is modular, without the need for physical links between modules. If one module is knocked out, traffic can be re-routed, thus minimizing disruptions of service. This is especially important for emergency planning.

Fortunately, the GTE Mobilnet cellular network proved reliable throughout the Loma Prieta earthquake and its aftershocks. The earthquake caused two cell sites to go down due to damaged landline telephone trucks, which were up within 48 hours. An additional cell site lost emergency standby power due to a failed electronic generator card, but was operating within 12 hours. This site was located just one-half mile from the epicenter on Mt. Loma Prieta.

Prior to the landline telephone system's restoration of service in the troubled areas, cellular phone to cellular phone was often the only possible method of communication. Call volume on GTE Mobilnet's network increased in some areas by as much as 500 percent. Within 24 hours, more than 400 cellular phones had been flown in from other GTE Mobilnet regional offices by private jet. Our employees worked around the clock to ensure that phones were programmed, tested and loaned to numerous emergency response

teams as quickly as possible. Technicians trained emergency personnel in their proper use. Cellular equipment, including GTE Mobilnet designed GOPAC (TM) units, were used by the California Highway Patrol in coordinating rescue operations, especially along the Cypress span of I-880. Phones were also provided to airlines, radio and television stations and various traffic reporting organizations, which kept commuters informed of rapidly changing traffic patterns. Senator Norman Mineta's office borrowed phones for coordination with disaster relief centers. All air time, equipment and technicians were provided at no charge.

GTE Mobilnet has an Emergency Restoration Plan to restore cellular service expeditiously. Engineers monitor the network to assess cell site and switch damage. In the event of failure, corrective action, such as re-routing traffic, increasing the power of adjacent sites and building additional emergency sites, can be taken. GTE Mobilnet staff also obtains and distributes additional cellular equipment to emergency agencies. On-going training in cellular communications use is provided free of charge to emergency personnel. As a community service, there is no charge to public agencies for the use of cellular equipment, air time and technicians during an emergency. Emergency service personnel can request cellular equipment by calling a hot line, which is monitored on a 24 hour basis. Cellular communications have been used by authorities in the Bay Area to help resolve crises ranging from forest fires to SWAT situations, and have been lauded by the California Office of Emergency Services, California Highway

Patrol, Department of Transportation and many other emergency agencies.

Californians were relatively lucky during the earthquake and are to be commended for the way in which they pulled together. GTE Mobilnet was especially fortunate to be able to escape this disaster with minor damage, enabling us to help in the relief efforts. The cellular industry has proven its potential to meet a variety of emergency needs. In order to continue to effectively assist in emergency situations, it is imperative that cellular communications companies expand and upgrade their networks. Moreover, cellular carriers must be permitted to work without obstruction to locate cellular facilities to better serve the public. A method must be found to quickly construct needed emergency facilities without time-consuming local review and permitting.

It is clear that cellular phones play a vital communications role in today's society. The cellular industry welcomes the opportunity to work with the Senate Energy Committee, as well as with the California Public Utilities Commission, to better serve the citizens of the state of California in emergency situations.

1. HOW WAS GTEC IMPACTED BY THE EARTHQUAKE?

GTE TELEPHONE OPERATIONS - WEST AREA HAD SIX (6) CENTRAL OFFICES IN THE IMMEDIATE EARTHQUAKE AREA, WITH APPROXIMATELY 62,000 WORKING LINES. ALL SIX (6) OFFICES EXPERIENCED TRAFFIC OVERLOADS IMMEDIATELY FOLLOWING THE EARTHQUAKE AND HEAVY CALL TRAFFIC CONTINUED THROUGH THE FOLLOWING WEEKEND. ONLY ONE CENTRAL OFFICE EXPERIENCED A LENGTHY SERVICE INTERRUPTION; SERVICE IN THAT OFFICE RESTORED AT 10:20 P.M. OCTOBER 17. THREE OFFICES WERE WITHOUT COMMERCIAL POWER FOR A TIME. THEY WERE ABLE TO PROCESS CALLS UTILIZING BACK UP POWER SOURCES, AND WERE RESTORED TO COMMERCIAL POWER BY FRIDAY OCTOBER 20. ONLY MINOR DAMAGE (SMALL CRACKS, PARKING LOT DAMAGE, TWISTED FRAMES, ETC.) WAS SUSTAINED BY CENTRAL OFFICE BUILDINGS THEMSELVES.

DAMAGE TO OUTSIDE PLANT FACILITIES FROM THE EARTHQUAKE WAS MINIMAL. THERE WERE SEVERAL DOWNED CABLES, POLES AND SERVICE DROPS, BUT NO DAMAGE TO INTEROFFICE TRUNKING FACILITIES. REPAIR EFFORTS WERE HAMPERED BY ROAD CLOSURES AND DIFFICULTY IN GAINING ACCESS TO SOME LOCATIONS.

OTHER COMPANY FACILITIES EXPERIENCED ONLY MINOR DAMAGE SUCH AS CRACKS, BROKEN LIGHT FIXTURES, OVERTURNED FURNITURE, ETC.

2. GTE'S IMMEDIATE RESPONSE TO THE CRISIS?

GTE'S IMMEDIATE RESPONSE TO THE CRISIS WAS TO ENSURE EMPLOYEE SAFETY THEN ASSESS DAMAGES INCURRED. CENTRAL OFFICE PERSONNEL ASSESSED DAMAGES, AND BEGAN STEPS TO PROVIDE SERVICE FOR THOSE WITHOUT. SOME EMERGENCY LINES WERE INSTALLED FOR PUBLIC USE. ADDITIONAL EMERGENCY SERVICES WERE PROVIDED AS THE UTILITY WAS ABLE. NETWORK SERVICES MANAGEMENT AND EQUIPMENT MAINTAINERS WERE DISPATCHED FROM SANTA BARBARA TO THE EARTHQUAKE AREA TO ASSIST IN THE REPAIR EFFORTS. OUTSIDE PLANT AND TECHNICAL FORCES WERE ASSIGNED TO TWO PERSON TEAMS. THEY WERE DISPATCHED TO LOCATE, IDENTIFY AND REPAIR PROBLEMS ENCOUNTERED IN THE FIELD, I.E., DOWNED CABLES, SERVICE LINES, ETC., BEGINNING THE EVENING OF OCTOBER 17.

3. HOW GTEC'S CUSTOMERS WERE AFFECTED?

CUSTOMERS SERVED FROM THE MONTEBELLO CENTRAL OFFICE IN LOS GATOS HAD LIMITED AND SPORADIC SERVICE FOR APPROXIMATELY 5 1/2 HOURS. THE REMAINDER OF THE CUSTOMERS SERVED FROM CENTRAL OFFICES IN THE AFFECTED AREA RECEIVED DELAYED DIALTONE. CONTROLS PUT INTO PLACE BY NETWORK MANAGEMENT ALSO AFFECTED SERVICE.



Michele Pereira
Administrator
Emergency Preparedness
Group
2025-11-03

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4. WHAT KIND OF DAMAGE DID GTEC EQUIPMENT SUSTAIN?

CENTRAL OFFICE - THE MAJORITY OF PROBLEMS ENCOUNTERED AFTER THE EARTHQUAKE WERE AS A RESULT OF LACK OF COMMERCIAL POWER RATHER THAN ACTUAL DAMAGE SUSTAINED. A #1EAX SWITCH IN THE MONTEBELLO CENTRAL OFFICE DID SUSTAIN DAMAGE TO TWO DRUMS, LIMITING CALL PROCESSING ABILITY UNTIL RETURNED TO FULL OPERATION BY THURSDAY EVENING OCTOBER 19.

OUTSIDE PLANT DAMAGE CONSISTED OF BROKEN AND CRACKED POLES, DOWNED CABLE AND SERVICE LINES.

5. WHAT PROGRESS (SPEED) DID GTEC MAKE IN REPAIRING THE DAMAGE TO EQUIPMENT AND RECOVER FINANCIAL LOSSES?

GTEC COMPLETED REPAIRS TO EQUIPMENT OCTOBER 19, 1989 AT APPROXIMATELY 6:20 P.M. FULL SERVICE CAPABILITIES WERE ACHIEVED WITH RETURN TO COMMERCIAL POWER DURING THE LATE EVENING HOURS ON OCTOBER 19, 1989.

INASMUCH AS THE DAMAGE SUSTAINED TO GTEC EQUIPMENT AND FACILITIES WAS MINOR, MINIMAL LOSS WAS EXPERIENCED AND RECOVERY WAS INCLUDED IN THE COST OF DOING BUSINESS.

6. WHAT EMERGENCY PROCEDURES EXISTED PRIOR TO THE EARTHQUAKE?

GTE CALIFORNIA HAS ESTABLISHED PROCEDURES FOR CATASTROPHIC DISASTERS. PROVISIONS HAVE BEEN MADE FOR FOOD, WATER, MEDICAL SUPPLIES AND TOOLS AT ALL WORK LOCATIONS. EMPLOYEES ARE PREPARED TO BE SELF SUSTAINING FOR A PERIOD OF AT LEAST 72 HOURS.

EACH SITE HAS AN EMERGENCY RESPONSE TEAM ESTABLISHED AND TRAINED TO DETERMINE THE NEED, IF ANY, TO EVACUATE COMPANY BUILDINGS AFTER AN EARTHQUAKE. EMERGENCY RESPONSE TEAM MEMBERS ARE INSTRUCTED IN FIRST AID, CPR AND SEARCH AND RESCUE TECHNIQUES BY QUALIFIED EXPERTS IN THOSE FIELDS. THEY ARE INSTRUCTED TO CARE FOR EMPLOYEE SAFETY AND EVACUATION FIRST, COMPLETE A DAMAGE ASSESSMENT OF THE FACILITY SECOND, THEN REPORT THEIR CONDITION AND TAKE WHATEVER ACTIONS ARE NECESSARY AND POSSIBLE TO RESUME OPERATIONS.

AT EACH WORK SITE THE EMERGENCY RESPONSE TEAM HAS DEVELOPED A 10 POINT EMERGENCY RESPONSE PLAN THAT IS UNIQUE TO THAT LOCATION. EACH 10 POINT PLAN MUST INCLUDE HOW THAT SPECIFIC SITE HAS ADDRESSED THE FOLLOWING:

1. EMPLOYEE TRAINING AND EDUCATION
2. SEARCH AND RESCUE
3. DISASTER SUPPLIES
4. HAZARD IDENTIFICATION
5. RESOURCE IDENTIFICATION
6. GOVERNMENT/COMMUNITY LIAISON
7. COMMUNICATIONS
8. DAMAGE ASSESSMENT
9. SERVICE RESTORAL
10. DISASTER ORGANIZATIONAL CHART AND RESPONSIBILITIES.

THE OVERALL COMPANY TEN POINT PLAN INCLUDES A PROCEDURE ESTABLISHED FOR THE IMPLEMENTATION OF THE EMERGENCY OPERATING CENTER IN THE EVENT OF A MAJOR DISASTER. FIELD RESPONSE GROUPS ARE INSTRUCTED TO COMMUNICATE WITH THE EMERGENCY COMMAND CENTERS (ESTABLISHED AT THE REPAIR ANSWER CENTERS). ULTIMATELY INFORMATION AND DAMAGE ASSESSMENTS ARE COMMUNICATED FROM THE EMERGENCY COMMAND CENTERS TO THE EMERGENCY OPERATING CENTER FOR POLICY DECISIONS AS REQUIRED.

NETWORK SERVICES, THE DEPARTMENT RESPONSIBLE FOR THE LOCATIONS PROVIDING DIAL TONE TO CUSTOMERS, HAS THE CAPABILITY AND DOES REMOTELY MONITOR CENTRAL OFFICES 24 HOURS A DAY. SHOULD A DISASTER OCCUR THAT AFFECTS THE UTILITY'S ABILITY TO PROVIDE SERVICE TO CUSTOMERS, THE REMOTE LOCATION WOULD BE AWARE OF THE CONDITION AND TAKE APPROPRIATE ACTION.

7. WERE THEY EFFECTIVE?

YES. HOWEVER, THE CUSTOMER BASE AFFECTED BY THE OCTOBER 17, 1989, EARTHQUAKE DID NOT WARRANT THE ACTIVATION OF THE EMERGENCY COMMAND CENTERS NOR THE EMERGENCY OPERATING CENTER. LOCAL FIELD RESPONSE GROUPS RESPONDED TO THE EMERGENCY AND DID IMPLEMENT THE 10 POINT EMERGENCY RESPONSE PLAN THAT HAD BEEN ESTABLISHED AT EACH LOCATION AFFECTED.

8. HOW CAN GTEC IMPROVE ITS EMERGENCY RESPONSE SYSTEM IN CASE OF FUTURE DISASTERS?

GTEC IS IN THE PROCESS OF REVIEWING ITS MASTER EMERGENCY PLAN. EMPHASIS WILL BE ON IMPLEMENTING A COMPANYWIDE RADIO DISASTER REPORTING SYSTEM, UTILIZATION OF HAM RADIO CAPABILITIES, AND MODIFICATION OF REPORTING STRUCTURES AND PROCEDURES TO INCORPORATE RECENT INTERNAL COMPANY ORGANIZATIONAL CHANGES, AS WELL AS CONTINUED EMPHASIS ON PREPAREDNESS EDUCATION FOR EMPLOYEES AND CUSTOMERS.



TESTIMONY OF J. BOWMAR RODGERS

BEFORE THE SENATE COMMITTEE ON ENERGY
AND PUBLIC UTILITIES

FEBRUARY 2, 1990

TESTIMONY OF J. BOWMAR RODGERS
PRESIDENT, US SPRINT
WESTERN BUSINESS MARKET GROUP

BEFORE THE SENATE COMMITTEE ON ENERGY AND PUBLIC UTILITIES

FEBRUARY 2, 1990

MR. CHAIRMAN, SENATOR RUSSELL, AND MEMBERS OF THE COMMITTEE: MY NAME IS BOW RODGERS, PRESIDENT OF US SPRINT WESTERN BUSINESS MARKET GROUP. WE APPRECIATE THE OPPORTUNITY OF COMMENTING ON THE IMPACT OF THE OCTOBER 17 EARTHQUAKE ON THE COMPANY, OUR RESPONSE TO THIS MAJOR DISASTER, EFFORTS TAKEN TO ENSURE CONTINUOUS SERVICE TO OUR CUSTOMERS, AND HOW WE INTEND TO IMPROVE ON OUR EMERGENCY RESPONSE CAPABILITIES IN THE FUTURE.

US SPRINT, AS MANY OF YOU KNOW, IS THE THIRD LARGEST LONG DISTANCE CARRIER IN THE UNITED STATES, WITH THE ONLY NATIONWIDE 23,000 MILE COMPLETELY DIGITAL FIBER OPTIC NETWORK. OUR OVER 16,000 EMPLOYEES SERVE OVER 8 MILLION CUSTOMERS, ALSO PROVIDING SWITCHED VOICE SERVICES TO OVER 150 COUNTRIES. WE ALSO PROVIDE VIDEO AND DATA SERVICES WORLDWIDE. US SPRINT HAS PURCHASED A FIFTY PERCENT (50%) SHARE IN THE TRANSATLANTIC FIBER OPTIC CABLE VENTURE KNOWN AS PTAT, AND IN 1988 WAS AWARDED A FORTY PERCENT (40%) SHARE IN THE FEDERAL GOVERNMENT'S FTS 2000 PROCUREMENT-- DESIGNED TO PROVIDE STATE OF THE ART VOICE, DATA, AND VIDEO

Testimony of J. Bowmar Rodgers
Before the Senate Committee on
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Feb. 2, 1990

SERVICES TO OVER 1.3 MILLION FEDERAL EMPLOYEES ACROSS THE
COUNTRY.

WE TAKE PRIDE IN OUR ABILITY TO PROVIDE QUALITY SERVICE TO OUR
CUSTOMERS NATIONWIDE DURING NORMAL CIRCUMSTANCES, AS WELL AS
DURING UNFORESEEN EMERGENCIES. THE EARTHQUAKE OF OCTOBER 17, WAS
SUCH AN EMERGENCY WHICH WE NEVER KNOW WHEN TO EXPECT, BUT
NEVERTHELESS MUST BE PREPARED FOR.

WE HAVE MAJOR FACILITIES THROUGHOUT THE STATE OF CALIFORNIA TO
INCLUDE THE BAY AREA. OUR SWITCHING CENTERS ARE MANNED 18-24
HOURS PER DAY, STAFFED WITH WELL-TRAINED TECHNICIANS AVERAGING 12
YEARS EXPERIENCE, WITH MANAGERS HAVING OVER 15 YEARS OF
EXPERTISE. AS A RESULT OF AN ASSESSMENT OF THE IMPACT OF THE
EARTHQUAKE FROM THESE EMPLOYEES AND OUR OWN ON-SITE
INVESTIGATIONS, WE ARE PLEASED TO REPORT THAT NO SIGNIFICANT
DAMAGE TO ANY OF OUR EQUIPMENT OR FACILITIES WAS EXPERIENCED AND,
AS A RESULT, WE ENCOUNTERED NO INTERRUPTION OF SERVICE TO OUR
CUSTOMERS.

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WE HANDLED AN ESTIMATED 5.1 MILLION CALLS DURING THE 24-HOUR PERIOD FOLLOWING THE EARTHQUAKE, WITH THE NORMAL VOLUME OF CALLS WOULD BE IN THE NEIGHBORHOOD OF 1.8 MILLION. DUE TO THIS HIGH VOLUME OF INCOMING AND OUTGOING CALLS, CERTAINLY SOME CUSTOMERS WERE TEMPORARILY INCONVENIENCED, RECEIVING BUSY SIGNALS OR RECORDINGS THAT ALL CIRCUITS WERE BUSY. WE WORKED CLOSELY WITH PACIFIC BELL TO ENSURE THAT OUTGOING EMERGENCY CALLS RECEIVED TOP PRIORITY BY "CHOKING" INCOMING CALLS TO THE BAY AREA. THIS INDUSTRY COORDINATION IS ESSENTIAL IN MAINTAINING TELECOMMUNICATIONS SERVICE DURING SUCH A DISASTER.

THOSE MEMBERS OF OUR CUSTOMER SERVICE GROUPS WHO WERE STILL AT THEIR WORKSTATIONS REMAINED ON DUTY ANSWERING CALLS FROM OUR VARIOUS CUSTOMERS ON THE IMPACT OF THE EARTHQUAKE, AS WELL AS OTHER INQUIRIES. MANY OF THOSE ON DIFFERENT SHIFTS HAVING LEFT EARLIER, RETURNED TO WORK (WHERE HIGHWAY TRAFFIC CONDITIONS PERMITTED) TO ALSO ASSIST IN RESPONDING TO CUSTOMERS' CONCERNS. I CANNOT SAY ENOUGH ABOUT THE DEDICATION AND COMMITMENT OF OUR OPERATIONS, CUSTOMER SERVICE, AND OTHER ADMINISTRATIVE STAFFS WHO RESPONDED SO EFFECTIVELY AND TIRELESSLY TO THIS MAJOR CRISIS.

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TIME WILL NOT PERMIT MENTIONING THE MANY HUMAN INTEREST STORIES ASSOCIATED WITH OUR BAY AREA EMPLOYEES DURING THIS PERIOD.

OUR STRUCTURAL ENGINEERS MADE ON-SITE INVESTIGATIONS AND DETERMINED THAT THERE WAS NO STRUCTURAL DAMAGE TO ANY OF OUR FACILITIES. OUR EMERGENCY BACK-UP BATTERIES AND GENERATORS, WHICH ARE STANDARD IN ALL OF OUR MAJOR FACILITIES, PERFORMED WELL DURING THE INTERRUPTION OF COMMERCIAL POWER (ESTIMATED 60 HOURS).

ALTHOUGH IMPROVEMENTS IN PROCEDURES AND FACILITIES ARE CONTINUALLY BEING MADE, WE MAKE GREAT EFFORTS TO BE PREPARED FOR VARIOUS TYPE OF EMERGENCIES. EMERGENCY PLANNING, WITH REGARDS TO EQUIPMENT AND PERSONNEL ACTIONS, IS ACTUALLY A PART OF OUR NORMAL OPERATIONAL READINESS BECAUSE WE REALIZE THAT NATURAL OR MANMADE DISASTERS COULD OCCUR AND CAUSE SERVICE INTERRUPTIONS AT ANY TIME. WE TRAIN OUR PERSONNEL, BRACE OUR EQUIPMENT, SECURE OUR FACILITIES IN THE LIKELIHOOD OF STORMS (WINDS AND FLOODS), FIRE, EARTHQUAKES, AND EVEN PREPARE FOR CIRCUMSTANCES RESULTING FROM POSSIBLE BREACHES IN SECURITY. OUR EMERGENCY PLANNING FOR THE VARIOUS FACILITIES INCLUDE GUIDELINES FOR STORAGE OF FOOD, WATER, AND MEDICAL SUPPLIES, FIREFIGHTING IN LOCALIZED AREAS, TESTING OF

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EQUIPMENT, MONITORING THE NETWORK, AND COMMUNICATIONS WITH OTHER FIELD AND HEADQUARTERS STAFF AT OTHER LOCATIONS.

OUR FIBER OPTIC CABLE, DIRECTLY BURIED GENERALLY BETWEEN 36 AND 42 INCHES BELOW THE GROUND WITHSTOOD THE EARTHQUAKE WITH NO DISCERNIBLE DAMAGE. WE DO HOWEVER HAVE REDUNDANCY BUILT IN THE NETWORK AT SELECTED LOCATIONS IN THE EVENT OF SERVICE INTERRUPTIONS. FURTHERMORE, IN THE PAST, WE HAVE CONDUCTED EXERCISES WITH FEMA, THE AIR NATIONAL GUARD, AND THE FEDERAL GOVERNMENT'S NATIONAL COMMUNICATIONS SYSTEM TO SIMULATE MAJOR DISASTERS, REVIEWING PROCEDURES AND USE OF MOBILE EQUIPMENT TO RESTORE SERVICE IN THE EVENT OF EMERGENCY SITUATIONS.

WE ARE CONFIDENT THAT WE WILL BE ABLE TO CONTINUE TO PROVIDE QUALITY SERVICE TO OUR CUSTOMERS IN THE EVENT OF SIMILAR EMERGENCIES, SINCE WE CONTINUE TO REASSESS AND REEVALUATE THE SURVIVABILITY OF OUR NETWORK FOR POSSIBLE UPGRADE, AS WELL AS PROCEDURAL CHANGES TO ENSURE CONTINUITY OF SERVICE.

I WOULD AGAIN LIKE TO PUBLICLY COMMEND OUR EMPLOYEES WHO, THROUGH MANY HUMANITARIAN GESTURES DURING THIS DISASTER, BOTH IN THE WAY

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OF VOLUNTEERING THEIR SERVICES AS WELL AS CONTRIBUTING CLOTHING AND CASH DONATIONS, ALLOWED US SPRINT TO PLAY A MAJOR ROLE IN GETTING THE BAY AREA BACK ON IT FEET. ALL THE PLANS AND PROCEDURES IN THE WORLD ARE OF NO CONSEQUENCE WITHOUT THE DEDICATION OF PEOPLE LIKE THIS.

TO SUMMARIZE, WE FEEL WE PERFORMED IN A MANNER CONSISTENT WITH THE HIGHEST STANDARDS OF MAINTAINING QUALITY SERVICE TO OUR CUSTOMERS DURING NORMAL AND EMERGENCY CONDITIONS. WE ARE CONTINUING TO IMPROVE AND BUILD ON THAT RECORD. I WOULD BE HAPPY TO ANSWER ANY QUESTIONS YOU MAY HAVE.

THANK YOU.



OFFICE OF EMERGENCY SERVICES

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**SENATE COMMITTEE ON ENERGY AND PUBLIC UTILITIES HEARING**

February 2, 1990

Public Utilities Commission Auditorium
505 Van Ness Avenue, San Francisco

Testimony by: John B. Passerello, Assistant Director
Response and Recovery
State Office of Emergency Services

Thank you for allowing me the opportunity to testify today regarding the role of the Office of Emergency Services (OES) in responding to the earthquake and loss of utility service and how our efforts were coordinated with those of the utility companies.

I have invited Ron Grasser, OES Utilities Coordinator, to make a presentation also.

OES was alerted to the earthquake as soon as it happened. We have a 24-hour warning center and included in that center is a monitoring system connected to instruments throughout the state that detect earthquakes over a 3.0 Richter magnitude. OES and other state agency staff reported to the State Operations Center within a half hour of the event. County operations centers reported to OES that they were operational and gave us preliminary information regarding their status and ability to respond locally.

This earthquake was not a catastrophic event and therefore most of the incidents were manageable by state and local government and the utilities. We used a combination of communications systems including telephone, the state's microwave radio system, the National Warning System, other state agency communications systems and the amateur radio system. We were able to fill all of the resource requests that came into the OES regional command center and the State Operations Center.

We had representatives from the following agencies at the State Operations Center to handle any requests dealing with the loss of utilities: Dept. of Water Resources, Dept. of Health Services, Dept. of General Services, California Military Department, California Energy Commission, Pacific Bell, Pacific Gas and Electric and the OES Utilities Division. Through the resource coordination system within the SOC we also had access to all private vendors. The federal government also had the following representatives at OES headquarters to provide any federal assets that might be needed: the Federal Emergency Management Agency, the U.S. Forest Service, the U.S. Sixth Army, the U.S. Coast Guard and the U.S. Army Corps of Engineers.

All requests for assistance came through local government to the OES regional office and the SOC. The first level of response would try to meet the need of the requesting individual and if this was not possible then the next level would try to handle the request. This ensured that the closest resource would be used to handle the need in a timely manner.

Requests for potable water were handled by the Dept. of Health Services with assistance from private vendors, the Calif. Military Dept. and the U.S. Army Corps of Engineers. Several water associations were also involved in this process. The Calif. Dept. of Forestry and Fire Protection provided water tenders in those areas where water systems were knocked out for emergency fire fighting water supplies.

Gas and electric utilities were taken care of by the Pacific Gas and Electric Company. OES assisted several governmental agencies with emergency generators, from private vendors and government sources.

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February 2, 1990

Testimony of John B. Passerello - Page 3

Telecommunications were handled in a variety of ways, as stated earlier. Cellular One offered the use of cellular phones and they were used heavily by state and local government agencies.

We are still involved in the disaster application process for private individuals. We have over 100 federal-state engineering teams working with local government and state agencies in the damage survey process to begin reconstruction. We are meeting with local, state and federal government agencies and the private sector to review emergency plans and procedures and making revisions as necessary.

At this time I would like to introduce Ron Grasser, OES Utilities Coordinator, who will describe our relationship with the utility companies and the functions of the Utility Policy Committee, brief you on the Utilities Emergency Plan and cite examples of OES coordination and assistance with the utilities during the earthquake.



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*SENATE COMMITTEE ON ENERGY AND PUBLIC UTILITIES HEARING**February 2, 1990**Public Utilities Commission Auditorium
505 Van Ness Avenue, San Francisco*

*Testimony by: Ronald E. Grasser, Utilities Coordinator
Utility Policy Committee*

Thank you for allowing me the opportunity to testify today regarding the role of the Utility Policy Committee, Utilities Emergency Plan and examples of OES coordination and assistance with the utilities during the earthquake.

UTILITY POLICY COMMITTEE

The utility companies of California, represented by the Utility Policy Committee, in mutual support of each other and State and local governments, have provided a representative to facilitate the communication between the State Office of Emergency Services and the companies represented by the Utility Policy Committee. During a situation that necessitates the implementation of the Emergency Plan, the Utility Policy Committee has appointed a Chief of Utilities (and alternates) to manage the represented utility and their response and communication to the State Office of Emergency Service.

In support of this cooperative spirit, the Utility Policy Committee has developed the State of California Utilities Emergency Plan which provides a structure for cooperation and communication at the State Office of Emergency Services and

Regional level. The Utilities Emergency Plan will be utilized during both peacetime and state of War emergencies.

All electric, gas, water, and telecommunication utilities within the state are represented by the Utility Policy Committee. That committee has developed an organization headed by the Chief of Utilities and has provided a Utilities Coordinator that is located at the California Office of Emergency Services in Sacramento. This Coordinator (provided through a self funded operation via the Utility Policy Committee):

- o Provides Practical Liaison with all electric, gas and water utilities within the state.
- o Provides centralized communication between the utilities, the State Office of Emergency Services, the Chief of Utilities, and the Utility Policy Committee.
- o Provides the technical personal information which allows for efficient communication, negotiation, and support among the utilities by the Chief of Utilities.

REVIEW OF UTILITIES EMERGENCY PLAN (copy attached)

EXAMPLES OF OES COORDINATION AND ASSISTANCE WITH THE UTILITIES

The Office of Emergency Services opened their Emergency Operating Center immediately following the earthquake and I set up operations in my office at OES. Rich Cashdollar, PG&E Sacramento Valley Regional Electric Operations Manager, the acting Chief of Utilities, arrived and we attempted to establish communications

with the utilities in the affected area. We had limited success and as a result damage assessments were very sketchy. We did find out that there were widespread outages of gas and electricity throughout the entire affected area. Our first overview of the many problems was through TV coverage. The aerial views of the fires in San Francisco and damage to the Bay Bridge gave us an idea of what to expect.

We were in contact with Pacific Bell's Emergency Control Center in San Ramon and established communications with PG&E through their internal communication system.

The power outages in San Francisco caused additional problems for Pacific Bell. Their main switching center at 555 Pine Street, that serves the majority of down town San Francisco, lost their emergency generator. They had a minimum amount of battery power to maintain their data base for the center. They contacted me and I was able to communicate their situation to the local PG&E office.

PG&E dispatched crews to attempt to restart their generator. They were unable to start the generator they isolated their service and were then able to reestablish normal service in time to save Pacific Bell's switching center. Through coordination between Pacific Bell and PG&E the remaining switching centers in San Francisco were given priority service restoration to maintain phone service in the city.

PG&E sustained major damage to the 500KV equipment at their Metcalf Substation in south San Jose and Moss Landing Substation. We were able to coordinate two missions utilizing Air Force C5A aircraft to transport 500 KV equipment from Pennsylvania and

Tennessee to Moffett Field Naval Air Station in Mountain View. This equipment was necessary to maintain electric service to the heavily impacted Santa Clara, Santa Cruz, San Benito, and Monterey counties.

Gas service was interrupted throughout the earthquake devastated area. Customers unnecessarily turned off their gas services which added to the restoration problems. Through the utilities mutual aid system gas service personnel from San Diego Gas and Electric Company and Southern California Gas Company were sent to help PG&E's people. In addition, Sierra Pacific and Southwest Gas, both located in Nevada, and Mountain Fuel, located in Utah, all provided personnel to help with repairs and relighting. More than 350 people from other companies aided in the recovery work.

Also 3000 electric, gas and transmission employees from throughout the PG&E system were brought in to help with repairs and restore service.

Water systems throughout the earthquake area were also severely damaged. There were numerous calls from water districts throughout the state offering manpower and material. These resources were itemized in the Resources Section of the OES State Operations Center and made available to the affected water districts through the OES Regional Office.

Since the earthquake, the Department of Water Resources has assigned Mr. James McDaniel as the State Water Operating Engineer. California Office of Emergency Services' Planning Division and I have met with him, his staff, and Department of Health Services to develop an action plan to aid small water agencies and have a more coordinated response to emergencies.

CALIFORNIA
UTILITIES EMERGENCY PLAN

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CALIFORNIA

UTILITIES EMERGENCY PLAN

I. GENERAL

All electric, gas, water, and telecommunication utilities within this state are represented by the Utilities Division of the State Office of Emergency Services (OES). The Utilities Division at OES headquarters is maintained by the utilities as a coordinating agency between the various utilities and between the utilities and other essential services which comprise the Office of Emergency Services. The Utilities Division is organized to provide centralized guidance, uniform procedures, and practical liaison when these are required, either in planning for emergencies or in emergency operations.

The basic plan outlines actions for dealing with both natural and war-caused disasters. Although the ultimate objective (see Section II below) would remain the same in either event, the utilities' response would necessarily differ in some respects for each type of emergency.

II. RESPONSIBILITIES AND OBJECTIVES

- A. Utilities Responsibilities - To ensure restoration and continued operation of essential electric, gas, water, and telecommunication utilities required to support emergency operations.

To provide sufficient electricity, gas, water, and telecommunications to support or sustain disaster victims and workers in, or in close proximity to, affected areas.

- B. Objectives of Utility Participation in Emergency Planning - The basic objective of utilities emergency planning is to minimize the effects of disasters upon the users of electricity, gas, water and telecommunications. This involves measures designed to accelerate emergency repairs and restoration of service, an important aspect of which includes appropriate planning for the safety of operating personnel.

This objective is in conformity with the prevailing tradition among utilities for self-help and mutual aid in emergencies. Each utility will first exhaust its own resources before calling upon a neighboring utility for aid, and each is prepared to accept and/or extend assistance as the need and circumstances may dictate.

III. GENERAL PLAN AND OPERATIONAL CONCEPTS

- A. Statement of General Plan - The general plan is to continue the operation of utilities' (electric-gas-water-telecommunication) facilities, both private and public, under existing utility management, subject to the requirements of the Director, Office of Emergency Services.

Coordination with those federal agencies having national responsibilities for the continuity of utility services during a war emergency is accomplished as described in the State of California Emergency Resources Management Plan, issued on January 9, 1968, Part B - Resources Section IX - Utilities (Electric Power, Gas, Water). FEDERAL COMMUNICATIONS COMMISSION GEN. Docket No. 87-505, Adopted: October 27, 1988, established telecommunication service restoration priorities for a National Security Emergency.

Implemented in conjunction with the California Emergency Plan is the California Earthquake Response Plan, dated November 1, 1977. Appendix G, Resources and Support, outlines the Utilities' responsibilities during earthquake caused emergencies.

B. Operational Concepts - Certain general policies apply to all utility operations, whether following natural disaster or in a wartime emergency. These policies are as follows:

1. In order to provide sufficient electricity, gas, water, and telecommunications for emergency victims, workers, and industry, the utilities have established a statewide emergency organization, based upon the continued operation of each utility. The UPC Utilities Coordinator represents the utility industry, and, as such, will act as liaison between OES, the State Utilities Emergency Organization, and the utilities industry.
2. All personnel, equipment, supplies, and transportation facilities of individual utilities will be reserved primarily for that specific utility's operations and restoration.
3. Utility personnel separated from their home organization will report to and be under the direction of the management of the same types of utilities until they can return to their organizations.
4. Emergency communications will be provided by systems owned and operated by the utilities. Each facility will retain the use of its own communications system, unless otherwise directed by proper authorities.
5. Information about demand or availability of utilities will be furnished to governmental officials for use in informing the public.
6. Personnel assistance, supplemental equipment and supplies, will be requested through the Utilities Coordinator.
7. Engineering equipment and supplies not available from utility stocks, warehouses, or normal suppliers will be requested from the State Operating Engineers.
8. The Utilities Coordinator, provided through a self-funded operation of the utilities industry, does not provide for mutual aid operations of sewage or other waste disposal systems.

9. As needed, or requested, utilities representatives at all levels will compile post-emergency damage assessment reports and transmit them to OES.
10. Mutual aid agreements provide for compliance with prevailing priority systems relating to curtailment of customer demands or loads, restoration of service, and emergency service for other utilities or systems.
11. When required, manpower assistance and supplemental equipment and supplies will be requested through the UPC Utilities Coordinator.

IV. ORGANIZATION

In preparation for a possible major emergency, the utilities have established a statewide organization under a Joint Venture Agreement, which is based upon the normal day-to-day operation of each utility.

A utilities coordinator has been selected to represent the utility industry at the Office of Emergency Services in Sacramento. In addition, this plan provides for utility personnel who will serve, as requested, on the staff of local county and/or city emergency organizations.

- A. State Level - At the state level, the utilities operations staff consists of a Utilities Chief with alternates; the Utilities Coordinator; the Electric Operating Engineer with alternates; the Gas Operating Engineer with alternates; the Water Operating Engineer with alternates; and the Telecommunication Operation Engineer with alternates. Alternates of the State Electric, Gas, Water and Telecommunication Operating Engineers will, when requested, take over for any State Operating Engineer who is unable to function. All alternates will be available as assistants to the State Operating Engineers.

All of the above described people are regular utility employees except the Utilities Coordinator who works at OES headquarters in Sacramento and is a paid employee of the Utilities Joint Venture.

- B. Local Level - On the operational area or county and/or city level, local utilities personnel will normally represent the utilities for the purpose of providing centralized communications and coordinated operations under existing management structure. Local utilities will continue to operate in the tradition of self help and mutual aid before calling for area, regional, or state assistance.

Utilities will comply with the prevailing priority systems relating to curtailment of customer demands or loads, restoration of service, and emergency service for other utilities or systems.

V. PROCEDURES

Procedures will vary, depending upon local conditions, but in any widespread emergency, mutual aid may be the major factor in restoring damaged utilities.

- A. Actions in State of Emergency - Conditions of disaster or of extreme peril exist which threaten the safety of persons or property within the state caused by such conditions as air pollution, fire, flood, storm, epidemic, riot, or earthquake or other conditions, excluding those conditions resulting from a labor controversy or conditions causing a State of War Emergency.
1. The first duty of utility employees with emergency responsibility is to report their location and availability to the operating headquarters to which they are assigned.
 2. If their assistance is required they are to report to their respective operating headquarters or as directed.
- B. Actions in State of War Emergency - Certain actions will be executed upon receipt of one or more of the following types of warning: (It is assumed that each utility will also include plans pertaining to the safety of the immediate families of its personnel):
1. Strategic Warning - (No Signal) -- When the Federal Government advises the state that enemy-initiated hostilities may be imminent, the utilities, in cooperation with local jurisdictions, will take any of the following actions deemed appropriate:
 - a. Utilities serving large metropolitan communities located in, near, or remote from potential target areas, will initiate emergency operations as follows:
 - (1) On-duty utilities personnel will proceed without delay to their assigned destinations;
 - (2) Off-duty utilities personnel will, if possible, contact their utility headquarters to report their location, ascertain the circumstances, and receive such advice or instructions as may be indicated by developments; and
 - (3) The utilities emergency staff at each organizational level will effect coordination with state, regional, and local emergency agencies in support of full mobilization under Readiness Condition One, as established by the California Emergency Plan.
 - b. Utilities serving smaller communities from which rapid egress is considered feasible and which are located in close proximity to Strategic Air Command or Air Defense Command bases, may:

- (1) Disperse personnel and mobile equipment away from potential blast and heat areas to shelter in neighboring communities or to predesignated utility rendezvous points; and
 - (2) Institute other appropriate actions in accordance with local disaster operations.
2. Tactical Warning (Bell and Light Signal--RED) -- When warning is received through the National Warning System that an attack is in progress:
 - a. Utilities serving large metropolitan communities located in, near, or remote from potential target areas, will initiate emergency operations as follows:
 - (1) On-duty non-operating personnel will proceed to the nearest available shelter. As soon as safe, they will proceed to their emergency headquarters;
 - (2) On-duty utilities operators will implement emergency procedures prescribed in operations and shelter plans of each utility; and
 - (3) Off-duty utilities personnel will take cover in the nearest available shelter. As soon as safe, they will proceed to their emergency headquarters.
 - b. Utilities serving small communities from which rapid egress is considered feasible and which are located in close proximity to Strategic Air Command or Air Defense Command bases, may:
 - (1) Disperse personnel and mobile equipment away from potential blast and heat areas to shelter in neighboring communities or to predesignated utility rendezvous points; and
 - (2) Institute other appropriate actions in accordance with local disaster operations.
3. Attack - No Warning (Bell and Light Signal--RED) -- When initial information or indication is the detonation of a weapon, the utilities will initial emergency operations as follows:
 - a. On-duty non-operating personnel will proceed to the nearest available shelter. As soon as safe, they will proceed to their emergency headquarters;
 - b. On-duty utilities operators will implement emergency procedures prescribed in operations and shelter plans of each utility; and
 - c. Off-duty utilities personnel will take cover in the nearest available shelter. As soon as safe, they will proceed to their emergency headquarters.

C. Post Attack Procedures

Post attack activities of surviving utilities will be directed toward the restoration of electric, gas, and water services within their jurisdictions, as quickly and effectively as possible. To that end:

1. All utilities will use their own construction and maintenance crews to the maximum extent possible for the temporary remedial action required;
2. Each utility in the support areas will assemble its personnel and mobile equipment and prepare to dispatch assistance as directed by the Chief of the Utilities Division. Additionally, they will receive and utilize the personnel and mobile equipment they may be dispersed from nearby potential target areas by their counterpart types of utility; and
3. Utilities representatives at all levels will, when needed, compile post-disaster damage assessment reports and transmit them to the Chief of the Utilities Division, who will collect, evaluate, and report as needed and requested, current conditions relative to manpower, equipment, and supplies to appropriate governmental agencies.

**COMMENTS OF THE CALIFORNIA ENERGY COMMISSION
BEFORE THE SENATE ENERGY AND PUBLIC UTILITIES COMMITTEE**

"October 17, 1989, Earthquake: Impact on Public Utilities"

February 2, 1990

The California Energy Commission is pleased to offer comments on the Commission's response to the Loma Prieta Earthquake and the earthquake's impacts on our state's energy supply systems. Specifically, these comments address our contingency planning responsibilities, the Commission's role in the overall state emergency response effort, and how our response was coordinated with the state's utilities and fuel suppliers. We will then offer some general recommendations for improving the state's emergency response system.

Background. State law directs the Energy Commission to prepare, and periodically update, an **Energy Shortage Contingency Plan** (See Public Resources Code Section 25216.5 and 25700 et seq.). California has a comprehensive plan for assessing and mitigating the impacts of energy supply disruptions caused by geopolitical events, human error or natural disasters. Our plan is uniquely fashioned to build upon a public-private partnership, incorporating the emergency response plans of the state's utilities and fuel suppliers.

Over the past 18 months, we followed the approach described in the **1988 Contingency Plan** to respond to a number of incidents which disrupted the supply of electricity, natural gas or petroleum. We actively responded to the March 24, 1989 Valdez oil spill, the Richmond refinery fire, Shell Oil Company's North Sea oil platform explosion, the San Bernardino

gasoline pipeline explosion, the Whittier Narrows Earthquake, and most recently, the October 17, 1989, Loma Prieta Earthquake.

In each instance, the Commission was concerned that the potential disruption of energy supplies, in particular, petroleum product supplies, could have had serious consequences to public health and safety, or the state's economy. Following the procedures set forth in the 1988 Contingency Plan, we evaluated the impacts on energy prices and supplies of each event, and provided a detailed assessment of these impacts to the Governor's Office, the Legislature, the Office of Emergency Services, the U.S. Department of Energy, and our private sector counterparts.

Coordinated Response to the Loma Prieta Earthquake. In the case of the Loma Prieta Earthquake, we provided analysis of the energy supply impacts and our assessment of fuel availability throughout the Bay Area. Immediately following the October 17th disaster, the Commission conducted a preliminary assessment of the nature, extent and duration of the potential energy supply disruption. Relying on information from a network of private industry and government contacts, we gathered vital information to assess which electricity, natural gas and petroleum facilities were damaged by the earthquake.¹

Based on this assessment, we prepared and issued six Situation Reports beginning October 18th, in which we concluded:

¹ Regular contacts were maintained with OES, DOE, other state energy offices on the West Coast, Pacific Gas and Electric Company, Southern Pacific Pipeline Company, the California Service Station Council, Exxon, Shell Oil Company, ARCO, UNOCAL, Chevron, TOSCO and Pacific Refining.

- There was little or no damage to Bay Area refineries; only the UNOCAL terminal at Richmond reported a spill caused by ruptured gasoline storage tanks.
- Closure of petroleum product pipelines for safety inspections and hydrostatic testing minimally affected the delivery of petroleum products to impacted areas in Northern California.
- Petroleum product supplies were adequate to meet the anticipated demand.
- Pacific Gas and Electric Company made exceptional progress in restoring electrical power to its customers in the impacted areas.²
- Natural gas leaks from ruptured pipelines posed public safety hazards, necessitating house-by-house inspections by PG&E personnel.
- California utilities worked together effectively in the days following the earthquake to detect and repair natural gas leaks and to restore natural gas service.
- PG&E was able to meet its electrical load through switching and rerouting power, despite damage to electrical generation, transmission and distribution systems.

During the two weeks following the earthquake, the Energy Commission was in daily contact with Pacific Gas and Electric Company to monitor PG&E's progress in restoring electricity and natural gas service, and with representatives of the petroleum industry to track the availability of petroleum products to the impacted areas. We reported our findings to the Governor's Office and the State Emergency Operations Center at the OES Headquarters in south Sacramento.

² Initial reports indicated that between 500,000 and one million of PG&E's electric and natural gas customers were potentially affected by the earthquake. Within the impacted areas of San Francisco, Santa Cruz, Monterey, South Bay and East Bay, estimates of 77,000 natural gas customers and 96,000 electric customers were later reported to be without service.

Fortunately, with this moderate level disaster, the damage to electricity and natural gas systems was manageable, and petroleum refining and distribution systems remained intact. Despite localized power outages in the impacted areas within the City of San Francisco and in Alameda and Santa Cruz Counties, Pacific Gas and Electric Company performed admirably, restoring electricity and natural gas service to the majority of its customers within days of the October 17th earthquake. Our Commission issued a Resolution last month commending the company for its outstanding restoration efforts.

However, in a more severe earthquake such as the planning scenarios for a 7.5 magnitude quake along the Hayward fault, we would not have been so fortunate. Widespread power outages and fires caused by natural gas leaks, chemical spills, and petroleum product pipeline ruptures would have been common place. Using a "worst case" scenario, the state's emergency response capability would have been severely hampered as fuel shortages would have prevented vital emergency response functions, such as search and rescue operations.

If, for example, the Loma Prieta Earthquake had disabled the Bay Area oil refineries, there could have been more serious fuel supply disruptions. Once stored supplies were used up, special efforts would have been needed to secure alternate fuel supplies and to satisfy unusual fuel demands of emergency services vehicles. While the impacts of the October 17th earthquake on energy supplies were relatively minor, there were troubling indications of the potential for widespread fuel shortages.

Let us give you a case in point. In the aftermath of the Loma Prieta Earthquake, the City of Hollister's Fire Department experienced difficulties in responding due to lack of fuel.

Although there was fuel in underground storage, it was not readily accessible since there was no electric power to pump the fuel out of the ground. If this problem had been repeated over a widespread area, or if underground storage tanks had ruptured, auxiliary electric pumping would have been inadequate to meet the needs of emergency vehicles.

Use of State Petroleum Fuels Set-Aside. During a severe petroleum supply shortage caused by a major natural disaster, a politically motivated oil embargo, or a cutoff of Alaskan oil supplies to California refineries, the Energy Commission may recommend gubernatorial action to activate the State Petroleum Fuels Set-Aside Program. The purpose of this program is twofold:

- to protect life and property during a natural disaster by allocating fuel to vital emergency services, and
- to mitigate regional hardships associated with longer duration petroleum shortages.

This program would only be implemented after the Governor proclaims a State of Emergency. We were fortunate in the case of the Loma Prieta Earthquake that petroleum supplies were adequate to meet the anticipated demand.

Recommendations for Improving the State's Emergency Response System. Based on the Commission's role in the state government response to the Loma Prieta Earthquake, we see an immediate need to upgrade the state's emergency response systems, particularly in the

area of communications.³ The Energy Commission was one of many state agency responders present at the State Operations Center (SOC) in south Sacramento to assist the Office of Emergency Services (OES) in coordinating state resources, and in monitoring the earthquake's impacts on the energy supply systems.

Chairman Charles Imbrecht was personally present during the first several hours and witnessed the limits of the facility, which was inadequate to house the large number of state agency responders present. Cramped quarters, the absence of compatible computer equipment, and inadequate communications equipment greatly hindered the ability of state agencies to respond in a timely fashion. Since life-saving efforts are most effective during the first 72 hours, time lost due to ineffective communications could mean unnecessary loss of life and property.

He also witnessed first hand the problems of total reliance on land-based telephone communications, which was our primary mode of contact with OES, the federal government, and with the state's utilities and fuel suppliers. Alternative modes of communication such as FAX machines combined with cellular phones and satellite-based telecommunications, would provide an effective substitute for land-based systems which are potentially overloaded or damaged by a major natural disaster.

³ The Governor's proposed 1990-91 Budget include an additional \$11 million for OES to upgrade the state's emergency response system, with funding for emergency communications, earthquake preparedness planning, state and local training, and emergency response equipment.

Since the Energy Commission performs a dual function as both the energy branch of the statewide emergency response organization during a natural disaster, and as the lead agency for responding to longer term petroleum supply disruptions, we now recognize the need to upgrade our own emergency response capability. Based on our experience with the Loma Prieta Earthquake, we are investigating a number of equipment options to better link up with OES, the federal government and our private sector counterparts during a disaster.

These include:

- Portable FAX machines and computers equipped with modems
- Telephone systems with emergency priority-of-service
- A satellite television receiver system to monitor CNN and network news
- The potential to link up with the satellite-based telephone system that OES is proposing.

We urge the Senate Energy Committee to support state agency efforts to upgrade California's emergency response system. This is especially important since larger magnitude earthquakes, either along the Hayward Fault in Northern California or along the San Andreas Fault in Southern California, may be imminent within the next several years.

I know that my colleagues at the Governor's Office of Emergency Services and many other state agency responders share these concerns, and are pursuing solutions during the current budget year.

Summary. The state's utilities performed admirably, restoring electric power and natural gas service to the majority of the impacted customers within days of the October 17th earthquake. Coordination at the state level, and with the state's utilities and fuel supplies was effective, largely due to advanced planning and the cooperation of the private sector. Communication among state government agencies was hampered by inadequate facilities, staffing and emergency communications equipment.

California's response to the Loma Prieta Earthquake was adequate under the circumstances because state resources were stressed, but not overwhelmed. However, in a more severe earthquake or other major natural disaster, the limits of our state's emergency response capability would be greatly magnified, leading to unnecessary loss of life and property damage. Emergency planning and preparedness for a larger magnitude earthquake should be enhanced by needed improvements to the state's emergency response system.

M E M O R A N D U M

Date : Thursday, Feb. 1, 1990

To : Russ Copeland
Doug Long

From : John Dutcher

File No.: 8287

Subject : SENATE COMMITTEE ON ENERGY AND PUBLIC UTILITIES
Feb. 2, 1990 Committee Hearing on the October 1989
Earthquake Impact on Public Utilities

One of the general questions for consideration by the Committee is:

What emergency response lessons have we learned so our utilities are better prepared for the next disaster?

There are three areas of emerging concern after the immediate effects of the earthquake were attended to. They are:

1. Pre-authorization of balancing accounts for recovery of expenditures associated with natural disasters.
2. Flexibility in administration of utility tariffs to provide maximum allowable benefits under existing tariffs and authorization to deviate from tariffs on a temporary basis to accomodate emergency housing facilities.
3. Continuation of voluntary benevolent programs by utilities to deal with unforeseen disasters.

These items are expanded upon in the pages that follow.

1. Pre-authorization of balancing accounts for recovery of expenditures associated with natural disasters.

On October 25, 1989, Pacific Gas and Electric Company filed an emergency motion for authority to establish an "Earthquake Recovery Account" (ERA) which would be a balancing account to accumulate costs associated with the re-establishment of utility service and the repair and restoration of utility facilities affected by the northern California earthquake of October 17, 1989 and related events. The costs accumulated in the ERA would not cause any change in rates without further Commission action.

The Commission acted on PG&E's request on November 3, 1989[1] and again on November 22, 1989[2]. PG&E was authorized to establish an ERA for the following purposes:

1. Re-establishing utility service
2. Repairing, replacing, or restoring utility facilities damaged by the earthquake
3. Implementing governmental agency orders resulting from the earthquake
4. Recording recovered costs, such as insurance proceeds

Costs incurred prior to the date of the Commission's first action, Nov. 3, 1989 were not to be included in the account.

Cost recovery was predicated on subsequent review by the Commission, to include the following items:

1. The reasonableness of the incurred costs
2. Verification and approval of the methods used in recording the costs
3. Identification of changes in revenue or operations which offset such costs
4. Review of the extent to which PG&E accounts are currently funded for the purpose of system repair and maintenance.

1 Decision 89-11-029, dated November 3, 1989, in Application 88-12-005.

2 Decision 89-11-066, dated November 22, 1989, in Application 88-12-005.

Now that some time has passed and the events associated with the earthquake can be seen with better perspective, a problem of expense recovery between the time of the natural disaster and the creation of an ERA was observed. One way to ameliorate this problem would be to pre-establish Commission authorization for such recovery. This is currently being explored by CACD personnel. Excerpts from the draft document explain the problem

1. After the Loma Prieta earthquake, affected utilities requested that they be allowed to collect all the money expended in repairing damage to their systems that was caused by the earthquake. This Commission authorized memorandum accounts to track the expenses incurred subsequent to the resolution, but determined that allowing tracking of expenses incurred from the time of the natural disaster until the effective date of a Resolution would constitute retroactive ratemaking.

2. Because of this constraint, however, it is evident that an inequity exists. Utilities that react immediately to repair damage are not allowed to record their expenses for possible eventual inclusion in rates, while utilities that delay initiating repairs or arranging for emergency service until establishment of a memorandum account resolution are rewarded because they can record their entire expenses of reconstruction into a memorandum account. Although booking these expenses to a memorandum account does not prejudge the eventual determination of their reasonableness for inclusion in rates, the slow-to-react utility incurs significantly less risk than the responsible utility that acts quickly to return the system to service.

3. In order to minimize this inequity, it is appropriate to allow each utility that incurs extraordinary expenses as a result of a natural disaster to immediately record such expenses into a preestablished memorandum account.

2. Flexibility in administration of utility tariffs to provide maximum allowable benefits under existing tariffs and authorization to deviate from tariffs on a temporary basis to accomodate emergency housing facilities.

The Public Utilities Code and various Commission orders have established baseline quantities for customers and restrictions on utility service for master metered facilities. As an example, PG&E's Schedule GM - Master Metered Multifamily Service is closed to new installations in accordance with conservation goals that are furthered by individual metering. This restriction could be temporarily lifted for facilities especially built for victims of natural disasters, provided that the restriction would eventually be re-established.

3. Continuation of voluntary benevolent programs by utilities to deal with unforeseen disasters.

Pacific Gas and Electric Company, in a letter to the Energy Branch of the Commission, outlining PG&E's plan for low income and non-low income households, stated the following:

PG&E's initial response efforts centered on restoring power and natural gas service to the over 1.4 million affected customers. Subsequent efforts have focused on providing special consideration for those hardest hit by the tragedy.

Generally, assistance has been provided without regard to income level. However, PG&E does offer special low-income assistance through rate, energy conservation, and REACH[3] programs. The LIRA rate became effective on November 1, and special efforts are being made at customer outreach centers to provide information about it. Low-income conservation services are being modified and reallocated to accommodate the special needs of affected areas. And the REACH program is directing special efforts toward low-income earthquake victims.

One utility, Southern California Gas Company, has expressed its intent to stop its assistance program based on the contention that LIRA is an adequate substitute. The earthquake imposed sudden hardship on many people, highlighting the necessity for emergency help with utility bills. Sudden hardship can occur at any time for individuals, caused by job loss or other problems, and an assistance program can help, while LIRA may not.

3 PG&E's project REACH (Relief for Energy Assistance through Community Help) is that utility's benevolent assistance program that is jointly funded by donations from ratepayers and equity holders of the utility. It was initiated at Commission request in 1982.

REPORT TO THE SENATE ENERGY AND
PUBLIC UTILITIES COMMITTEE IN RESPONSE
TO QUESTIONS RAISED AT THE FEBRUARY 2, 1990
HEARINGS ON THE IMPACT OF THE
OCTOBER 1989 EARTHQUAKE ON PUBLIC UTILITIES

Prepared by the Staff of the
Public Utilities Commission
February 27, 1990

REPORT TO THE SENATE ENERGY AND PUBLIC UTILITIES COMMITTEE ON THE PERFORMANCE OF UTILITY SYSTEMS DURING THE LOMA PRIETA EARTHQUAKE

Immediately following the Loma Prieta earthquake the staff of the Public Utilities Commission began to gather information to assess the damage incurred by the utilities systems and to ensure that the utility companies were doing what they should to protect life, property and to restore service expeditiously. Subsequent to the quake the Commission has launched several investigations to address problems associated with the quake. The Commission is one of 13 state agencies that work directly with the Seismic Safety Commission in assessing the condition of utility systems throughout the state. Together, we are working to address earthquake related problems.

Based on work done to date, we conclude the following:

1. Although extensive damage occurred throughout the Bay Area as a result of the quake, the utility systems weathered the quake quite well.
2. Utility systems in California are essentially constructed as a grid, enabling service to be rerouted around earthquake damaged sectors. Thus, service can be rapidly restored.
3. Utility companies have good emergency response procedures and mutual assistance agreements in place that work well.
4. Holding emergency preparedness drills is beneficial.
5. The Commission by resolution commended the services done by the men and women of Pacific Gas and Electric Company, Pacific Bell, and the Bay Area Rapid Transit District during the earthquake recovery period.
6. While mutually owned water utilities are eligible for governmental emergency funds, investor owned water utilities are not eligible. This causes difficulties and delays for the small water companies in making needed repairs.
7. The Commission has authorized water, telephone, gas, and electric utilities to establish memorandum accounts for costs related to earthquake repairs that may be recovered in subsequent rate proceedings.
8. There was no major damage to the telecommunications network; however, high call volumes did create congestion and delays in the network.
9. Damage to the Bay Area Rapid Transit District (BART) facilities were minor and have been repaired or are in the process of being repaired.

10. Southern Pacific Railroad agreed to provide emergency transportation service immediately following the earthquake but later discontinued service because it didn't have sufficient liability insurance. Establishment of a state insurance compensation plan for emergencies such as this warrants consideration.
11. There is a need for the gas utilities to better inform the news media and populace as to the correct procedures for turning off gas services at the meter. The Commission is addressing this matter.
12. There is a need for utilities to identify areas of liquefaction and to examine existing systems and, if necessary, to institute corrective measures. The Commission is addressing this matter.
13. Damage to equipment in electric substations appears to be a recurring problem with each earthquake. The Commission is exploring with the utilities better ways to protect the systems.
14. The Commission currently encourages utilities to fund low income assistance programs. These programs are beneficial in temporarily assisting earthquake victims with their utility bills.

SCOPE OF THE COMMISSION'S INVESTIGATION

Water Utilities

The October "Loma Prieta" earthquake that centered northeast of Santa Cruz, overall, did little damage to the three major water utilities regulated by the Commission (California Water Service Company, Great Oaks Water Company and San Jose Water Company). The exception and most severe damage incident occurred to the Austrian Dam owned by San Jose Water Company, located seven miles south-southeast of Los Gatos and about eight miles from the epicenter. Fortunately the reservoir was nearly empty. Repairs are now about 90% complete and will cost about \$1.2 million.

Typical damage to the large utilities as well as a number of smaller water utilities in the area included, ruptured, distorted or moved storage tanks, broken inlet and outlet piping to storage tanks, and broken transmission and distribution mains. Power failure in the general area contributed substantially to the affected utilities' ability to restore service. Nearly all systems require power for pumping either in lifting water or boosting pressure.

The larger utilities were able to manage the operations of their systems by sectioning and bypassing while damage repairs were underway. Their financial and manpower resources enabled these

utilities to fully restore service in a relatively short period of time.

Smaller systems not having such resources were unable to restore service for considerably longer. Two systems, Mountain Charlie Water Works and Idylwild Water System, both located within about two miles of the epicenter were particularly hard-hit and, due to the lack of resources, unable to restore service for over a month. Both lost nearly all storage and distribution capability. Emergency repairs were made with volunteer manpower from the community and credit provided by material suppliers. Because of their eligibility for governmental emergency funds, nearby publicly and mutually owned water utilities were able to begin emergency repairs almost immediately.

All of Mountain Charlie's customers are receiving at least minimum service; however, the system will require virtual reconstruction. Engineering studies are underway. Repairs have been completed on the Idylwild system and all customers are receiving service. It should be noted that these systems were marginally adequate systems before the earthquake. They have many problems; the most severe being the inability to provide an adequate supply of water during the dry period of the year.

The Commission authorized affected utilities to record the costs of repair in memorandum accounts which will be the basis for future rate relief requests to the Commission. By this action it will be possible for the utilities to recover the cost of earthquake repairs. The Commission has granted rate relief to Mountain Charlie and Idylwild enabling both utilities to repay the debt incurred in making emergency repairs.

In evaluating the response and recovery capability of the investor owned water utilities damaged in the October Loma Prieta earthquake, it is immediately apparent that customers of the small water utilities were without water for an unacceptable period of time. This was due to the unavailability of emergency repair funds.

Telephone Facilities

The Loma Prieta quake caused no major damage to the telecommunications network. The San Francisco Bay Area and the Watsonville/Santa Cruz areas are served by Pacific Bell and GTE California Incorporated (GTEC). GTEC's service territory in these areas includes Los Gatos, Blossom Hill, Montebello, Morgan Hill, Kenwood, Novato and Isleton.

Although all central offices remained operational, high call volumes did create congestion and delays in the network. As the result, callers were confronted with delayed dial tone and busy circuit announcements. GTEC estimated that there were periods when only 10 to 20 percent of calls were able to get through.

Pacific Bell was forced to activate network protective controls to protect and restore the telecommunications network.

Damages to the utilities' switching equipment and outside plant facilities were minimal. The loss of commercial power resulted from the quake forced many of the utilities' central offices in the affected areas to go on back-up emergency systems, consisting of generators and batteries. Only three areas served by GTEC's Montebello and Pacific Bell's Bush/Pine and Hollister central offices experienced electrical service interruptions, lasting from three to six hours causing reliance on emergency back up facilities. Pacific Bell reported minor to significant damages to several of its buildings; all, however, are structurally safe.

Following the quake, Pacific Bell assisted the general public and various public agencies in meeting their emergency telecommunications needs. Pacific Bell activities after the quake include:

- . Providing telephone service to the City of San Francisco's facilities when the City-owned phone system became inoperable after the quake.
- . Installing phone lines for and/or providing cellular phones to city governments, emergency shelters, the Federal Emergency Management Agency and other public agencies.
- . Setting up phone banks at emergency shelters and the Cypress structure to provide access to long distance service and free local telephone service.

To assist residence and small business customers displaced by the quake, Pacific Bell waived the one-time installation fees associated with call forwarding and the monthly charges on a variety of services. GTEC also instituted disaster relief guidelines, waiving installation charges to its customers who were displaced by the quake if the new residence is located in the Los Gatos area; also, no charge will be applied if the customer moves back to the original address of record within one year from October 17, 1989.

Pacific reported one employee fatality associated with this disaster. A Bay Area Cellular employee was also killed while working on a tower at the Los Altos Abbey. Pacific Bell was also commended by the Commission in a resolution for its role during disaster recovery. An AT&T building was damaged during the quake, but service was maintained.

Customer Owned Pay Telephones (COPTS) were not able to provide service in those areas that lost power. Pac Bell and GTEC did not have these problems since their pay phones receive power from the central office of the utility.

Bay Area Rapid Transit District:

Bay Area Rapid Transit District (BART), already had an established emergency response procedure in place which was immediately implemented after the earthquake was noticed. BART immediately stopped all system operations and evaluated the situation. Electrical power and radio communication were lost for all trains on the San Francisco to Daly City line. In accordance with earthquake response procedures, all passengers were evacuated from the BART system as quickly as possible. A thorough visual inspection was conducted on all BART property by BART's power and way crew. After 7 hours of service disruption, BART re-established service the next day at 2:14 AM. During the inspection, minor damage were noticed throughout the system. Typical damage identified were the structural cracks in station structures classified as minor and concrete spalling at various places throughout the system. Two items which remained areas of concern to CPUC staff were the leaks in the Transbay Tube and the damage to the support of an aerial transition structure near the West Oakland station. BART has fixed the Transbay Tube leaks. Temporary shoring has been installed to provide additional support to the damaged aerial structure. An outside consultant hired by BART will make a determination on the best method to restore the structure to its pre-quake strength.

Major Railroads:

Immediately following the earthquake, the Commission staff mobilized and established a Command Post in its Sacramento Field Office. This office received reports from field staff describing the extent of damage sustained by the major rail lines in the San Francisco Bay and Watsonville areas as the result of the earthquake. This information was relayed to State Office of Emergency Services Headquarters Emergency Operations Control Center. Staff was also assigned to directly observe at the Southern Pacific Railroad's Western Region Operations Control Center in Roseville and the Union Pacific's Sacramento Train Control Facility the coordination of earthquake recovery and train operations.

Upon experiencing the earthquake, the major railroads, i.e. Southern Pacific, Santa Fe and the Union Pacific stopped all trains within approximate 50 mile radius of area thought to be effected by the quake. They then alerted their maintenance and operating department personnel who began detailed inspection of track structures before operations were resumed. The after shocks which followed that were in excess of point 4 on the Richter Scale caused the same procedure to be repeated. In the case of the Caltrain commuter train operation of the SF Peninsula an added degree of caution was applied with train running at slower speeds following many of the lesser after shocks.

In the Santa Cruz-Salinas area the Southern Pacific Railroad experienced seven bridge damage and misalignment of main track at

several locations. At locations where State Highways crossed over or under the tracks field inspections of the separation structures were coordinated with the Commission, Caltrans and railroad engineering staffs. The Union Pacific and Santa Fe railroads experienced little or no damage with minimal delay to train operations. Amtrak's passenger operations from Oakland to Bakersfield via the San Joaquin Valley returned to normal with approximately 24 hours. The east-west transcontinental trains were operated from Sacramento east. The former SP Oakland passenger depot was severely damaged and was closed. An adjacent SP building is now being utilized temporarily as a ticket office. During the course of its field investigation, the Commission staff found it difficult to communicate with the Sacramento Office due the phone service being interrupted. When Cellular phones were available calls went through consistently. This type of phone service experienced the least disruptions from the effects of the earthquake.

With regard to earthquake recovery, an area where the public would also benefit would be the establishment of an insurance compensation coverage plan so railroads like Southern Pacific would be covered for personal injury liability when they startup emergency passenger train service, i.e. Salinas to San Jose or Sacramento to Jose via Oakland. Without such liability insurance they are reluctant to provide such emergency passenger services, even for CALTRANS.

Short Line Railroads:

The only two Short Line railroads in the immediate area affected are the Santa Cruz Big Trees and Pacific Railroad (SCBT&PR) and the Oakland Terminal Railway (OT Ry). The SCBT&PR experienced no major damage even though it is in the immediate area of the epicenter. They are primarily a passenger carrier with little freight traffic. The OT Ry. is a switching line serving the Port of Oakland. Their operations were disrupted by damage to McArthur Freeway Interchange Structure. They also had some railroad cars and locomotive which the earthquake caused to roll away some distance. The railroads that were affected have generally completed repairs and their operations have returned to normal.

Passenger Transportation

The Commission and its Transportation Division staff responded to several needs in the area of passenger transportation. The Commission promptly approved emergency supplemental ferry service to East Bay points. Staff met with the Metropolitan Transit Commission, CalTrans, and public transit agencies on their post-earthquake transit plans. The transit agencies were provided with a list of licensed private bus operators should they need to obtain additional equipment. Additionally, steps were taken to stop bus operators from conducting sightseeing tours in the disaster areas. These steps included joint patrols by the staff

and the San Francisco Police Department in the Marina District, issuance of a press release by Commissioner Wilk, a warning letter being sent to approximately 500 bus operators, and the offer of assistance to law enforcement agencies in Santa Cruz, Monterey and San Benito Counties.

Gas and Electric Utilities:

The service rendered by the men and women at PG&E in restoring service to thousands of its customers was commendable. PG&E had in place an emergency response plan and implemented it well. PG&E had mutual assistance plans with its sister utilities and asked for and received needed assistance. The Commission recognized the good disaster recovery work done by PG&E and expressed its thanks through issuance of an official resolution.

As a whole, the electric and gas utility systems performed remarkably well during the earthquake. This was in part due to the grid system that has been established over the years. Although three major electric substations incurred substantial damage, PG&E was able to restore service rather quickly by rerouting service through various portions of the grid. Very few leaks or breaks occurred on PG&E's gas transmission lines. Although many miles of line were subjected to both lateral and vertical stresses, the ductility of the steel pipes withstood the quake quite well. Expect for those areas in which liquefaction occurred, gas distribution lines also held up well.

There were lessons learned from the quake. The news media did an excellent job of informing the public and explaining emergency procedures to follow. However, immediately following the quake, some radio and television announcers recommended to the public that they turn off their gas supplies at the meter. PG&E was able to contact the news people and they modified their recommendation by including "only if you smell gas." It should be noted that the yellow pages of the telephone book correctly states that the gas should only be turned off if the odor of gas is present. Consequently in part due to this miscommunication, the day following the earthquake approximately 145,000 people were without gas service. PG&E estimates that approximately 85% of these people had needlessly turned off their gas. PG&E was faced with one huge relight program. This was accomplished in record time with the help of over 400 people from neighboring utilities. Had the quake occurred during a cold snap in January and 145,000 people were without service, it is conceivable that thousands of people would not wait for PG&E to relight their appliances and would attempt to do it themselves and in the process many would be injured. In order to address this problem the Commission staff held a meeting with the gas utilities to explore more appropriate ways of informing the news media and the public when it is and is not advisable to turn off gas service.

Another lesson learned from the quake was that utility systems don't perform well in ground that is subject to liquefaction as

indicated by the extensive damage that occurred in PG&E's San Francisco Marina District. PG&E has completely rebuilt 10 miles of gas distribution and service lines in the Marina district and is to be commended for completing such a large undertaking in such a short period of time. The gas lines in the Marina that suffered the most damage were the old cast iron mains. Cast iron mains are noted for leaking and have been identified for replacement by utilities throughout the USA. Unfortunately for PG&E, they still have some 390 miles of cast iron main still in operation. Fortunately, the cast iron main not subjected to liquefaction performed quite well. Therefore, the Commission staff issued a letter to all gas and electric utilities in the state asking them to identify facilities in their service territories that are subject to liquefaction. This will identify those facilities with the highest need for attention or replacement.

A third lesson learned from the quake dealt with equipment found in electric substations. During the Whittier earthquake in southern California, Southern California Edison and the Department of Water and Power suffered substantial damage to their electrical equipment. A lot of the losses were attributed to equipment being improperly anchored to their foundations. During the recent quake, PG&E suffered major damage to three of its substations. Both the 230 kv and 500 kv circuitry were damaged. Much of this equipment was anchored to its foundations and still failed. Meetings will be held with all electric utilities to explore better ways of protecting this kind of equipment from damage during earthquakes.

The Commission has worked with the utilities to establish low income assistance programs. These programs are essential during disasters such as the recent earthquake. Pacific Gas and Electric Company, in a letter to the Energy Branch of the Commission, outlining PG&E's plan for low income and non low income households, stated the following:

PG&E's initial response efforts centered on restoring power and natural gas service to the over 1.4 million affected customers. Subsequent efforts have focused on providing special consideration for those hardest hit by the tragedy.

Generally, assistance has been provided without regard to income level. However, PG&E does offer special low-income assistance

through rate, energy conservation, and REACH¹ programs. The Low Income Rate Payer Assistance (LIRA) rate became effective on November 1, and special efforts are being made at customer outreach centers to provide information about it. Low-income conservation services are being modified and reallocated to accommodate the special needs of affected areas. And the REACH program is directing special efforts toward low-income earthquake victims.

One utility has expressed its intent to stop its assistance program based on the contention that LIRA is an adequate substitute. The earthquake imposed sudden hardship on many people, highlighting the necessity for emergency help with utility bills. Sudden hardship can occur at any time for individuals, caused by job loss or other problems, and an assistance program can help, while LIRA may not.

1 PG&E's project REACH (Relief for Energy Assistance through Community Help) is that utility's benevolent assistance program that is jointly funded by donations from ratepayers and equity holders of the utility. It was initiated at Commission request in 1982.



HEARING SOCIETY

20 Tenth Street • San Francisco, California 94103 • (415) 863-4710 [VOICE] (415) 863-2550 [TDD]

To: The Honorable Herschel Rosenthal, Chair
Senate Committee on Energy and Public Utilities

From: Bobbi Redinger, M.S. CFY Audiologist
Hearing Society for the Bay Area, Inc.

RE: Emergency telecommunications

Allow me to introduce myself, I am Bobbi Redinger. I am an audiologist at the Hearing Society for the Bay Area in San Francisco. Our agency is a private non-profit organization that provides a variety of audiological and social work services for the deaf and hearing impaired in the 5-county Bay Area.

Many of our clients were affected by the October 17, 1989 Loma Prieta Earthquake. Our clients rely on new technology which allows deaf and hearing impaired individuals access to telecommunications, especially telephone and television. These telecommunications are available only with publicly supported technologies, such as TDDs (Telecommunication Devices for the Deaf) and closed captioned decoders. Subsequent to the Loma Prieta Earthquake, many of utilities were unavailable to the general public in the Bay Area. Even after general communications were restored, public and private communications for deaf and hearing impaired communities remained crippled. A lack of information for these people created feelings of isolation. Some felt ignored or threatened because of the breakdown in communications. Emergency communication systems need to be established to avoid these same problems in the future. Inexpensive public solutions to these problems potentially exist, which could supply general emergency news and information to those who rely on publicly supported technologies.

The loss of power following the Earthquake, rendered TDDs inoperable, even many so called "battery operated" models. These models supplied free by Pacific Bell to eligible customers, unfortunately lead the customer to believe that if they leave the TDD plugged in, the batteries will be charged. This is incorrect, the batteries must be charged separately. Additionally, the California Relay System, which is a link between TDD users and non-TDD users, has a policy against giving out any information not related to a specific phone call. Therefore, TDD users could not get information through this relay service, unless they could successfully place a phone call, which was extremely difficult for all Pacific Bell customers subsequent to the Earthquake. There was no place in the San Francisco Bay



Area for a TDD caller to get current news and information, even in an emergency situation.

Following the Earthquake, many in the community turn to battery-operated radios for information. These devices are inaccessible to hearing impaired individuals. Many television stations operated on reserve power. Closed captioning in an emergency situation requires real-time captioning. Either the stations did not have the facilities for real-time captioning, or it never occurred to them to caption the information that they were presenting. Sign language interpreters appeared on one television station 19 hours after the Earthquake. Another station followed suit, but this interpreter was placed in a small bubble at the corner of the screen, this rendered the signing unintelligible.

I strongly urge your consideration of technology that will allow deaf and hearing impaired individuals the security of full access to information in the time of emergency. Thank you, in advance, for your time and continued deliberations on this subject.



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Prevalence of hearing impairment in California, based on the state Department of Finance's population estimated as of 1/1/89 and the State Department of Rehabilitation's demographic report of 1983.

Total state population is estimated at 28,662,000, of whom,

1,959,908 persons have an identified loss of hearing, of whom,

942,120 have a unilateral (one ear) loss of hearing, and

1,017,788 have a bilateral (two ears) loss of hearing.

Of the 1,017,788 people with bilateral hearing loss,

745,212 have a mild to moderate hearing loss ("hard of hearing"), and

272,576 have a severe to profound hearing loss ("deaf").

Of the 272,576 people classified as "deaf",

56,751 acquired the hearing loss from birth through age 18, and

215,825 acquired the hearing loss from age 19 through adulthood.

Based on the Bilingual Courts Study (Federal), it is possible to estimate that some 65,418 persons in California utilize primarily sign language for communication, which represents 24% of all those classified as "deaf", or somewhat less than 4% of the total population identified as "hearing-impaired".

8/4/89



Comments for Feb 2 Joint Hearing of Senate Energy and Public Utilities Committee/Assembly Utilities and Commerce Committee

It is wonderful that you are reviewing the utility problems which occurred during the October 17th quake. Fortunately for the people of California, there was no escape of nuclear material during that time. I say fortunately, because a traveling radioactive plume would be the most serious by far, of all threats to life and to the environment.

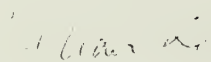
Radionuclides are the deadliest of all toxins. Exposure to them causes chromosome damage and invites cancer, early death and defective births.

I beg you to take preventive action. Ask the USGS and independent seismologists to calculate the maximum shake possible, based on the findings of the Loma Prieta quake. Then ask structural engineers if nuclear fuel could be released to the environment in such a shake. Hear experts who are not employed by the utility.

If the possibility exists that nuclear material could escape, the plants must be decommissioned. The financial loss is a minor consideration weighed against the millions of lives at risk.

I urge you to call a special hearing on this subject. Bring an end to the peril posed by nuclear power and weapons plants in our increasingly active earthquake zone. Removal of this danger may become the most heroic act of your careers.

Sincerely,



DR. WILLIAM LORAN
100 THORNDALE DR. #356 SAN RAFAEL, CA 94903
(415) 492-2566

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MEMORANDUM

TO: MEMBERS, SENATE ENERGY & PUBLIC UTILITIES COMMITTEE
FROM: COMMITTEE STAFF
FOR: FEBRUARY 2, 1990 COMMITTEE HEARING

SUBJECT: OCTOBER 1989 EARTHQUAKE:
IMPACT ON PUBLIC UTILITIES

THIS HEARING:

will evaluate the impact of the October 17, 1989 earthquake on California's public utility companies. Specifically, the committee will learn of the extent and cost of damage sustained by the utility companies; how the utility companies responded to the crisis; how utility customers were impacted; and what steps have been taken to improve emergency response in the case of future disasters.

The hearing will consist of four panels: first, the committee will hear from local government leaders, who will discuss how their communities' utility services were affected by the quake; second, representatives from the gas, electric and water industries; third, representatives from local, long-distance and cellular telecommunications companies; and last, state government officials who will explain the role their agencies played in this disaster.

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 - C) WATER
 - D) TRANSPORTATION
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I. BACKGROUND

On October 17, 1989, a 7.1 earthquake struck Northern California, claiming more than 60 lives and injuring at least 3,000. Damage estimates range from \$5 - 7 billion. Later named "Loma Prieta", this was the first major quake in Northern California since 1906. The epicenter of Loma Prieta was located ten miles east of Santa Cruz on the San Andreas fault.

Hundreds of thousands of Northern Californians were without gas, electricity, water or phone service. For some, utility damage was a short-term inconvenience. For others, quite some time would pass before their homes and businesses would be fully functioning. Even for those whose services went uninterrupted, the earthquake served as a reminder of how much we rely on utility services.

II. DAMAGES

A. GAS AND ELECTRIC UTILITIES

Approximately 1.4 million Pacific Gas & Electric (PG&E) customers lost electric power because of damage to the utility's power-generating and transmission facilities. Within 24 hours, power was restored to about 900,000 of those customers, and after 48 hours, all but 26,000 customers had electricity. PG&E experienced greater trouble in restoring gas service for two reasons. First, older, underground gas pipes were mangled in the quake, and in the Marina District of San Francisco alone, ten miles of gas pipe had to be replaced. Secondly, in the midst of the emergency, about 153,000 PG&E customers shut off gas to their homes and businesses, which later required individual relights at a rate of 460 homes per day.

Unit 2 of the PG&E-operated Diablo Canyon nuclear power plant, located in San Luis Obispo (140 miles south of the epicenter) continued operating with no reported damage. Unit 1 had been closed 11 days prior to the quake for routine refueling. However, several other PG&E power plants were damaged, including the Moss Landing Power Plant on Monterey Bay, the Portrero Power Plant and the Hunter's Point Power Plant, both in San Francisco.

Under the guidelines of a mutual aid agreement, PG&E received additional support from employees of Southern California Gas Co., San Diego Gas & Electric, and Sierra Pacific Power. PG&E obtained assistance from the U.S. Navy, who jump-started a generator and pumped steam into crippled equipment. PG&E also received offers from independent energy producers to provide additional power if necessary.

B. TELECOMMUNICATIONS

While almost all telephone lines continued to work following the quake, local and long-distance carriers stated that they blocked the flow of calls to keep phone circuits from overloading. Because of the World Series, Pacific Bell was already prepared to handle greater-than-normal traffic in the Bay Area. While phone companies asserted that their systems continued to operate, the restriction on incoming and outgoing calls led some customers to believe that their phones weren't working properly.

Of GTE's 68,000 lines in the Bay Area, 13,600 were disconnected because of damage sustained at the Montebello central office. Service for those lines was restored six hours after the quake. AT&T connected seven out of every ten calls attempted from the Bay Area to other regions; for incoming calls, three out of every ten calls made to the Bay Area were connected. MCI blocked 50 percent of calls going into three California area codes.

Though residents questioned the dependability of their wireline phone service, cellular phone service proved to be a reliable means of communication, particularly for emergency personnel. Cellular One's phone system reported experiencing ten times the usual volume of calls. Several "cell sites" were knocked out by the quake, but power was restored quickly in most cases.

C. WATER

Scattered water outages occurred throughout Northern California. Some of the smaller water companies are still unable to provide water to customers. The shaking of reservoirs led to the possibility of contaminated water, and customers were advised to boil water before using. In some cases, water companies lacked enough power to pump water into those tanks that had drained but could still function.

In late November, more than a month after the quake, one of San Francisco's three main water pipes burst. On January 18, another huge pipe burst. The San Francisco Water Department believes both events were caused by hidden damage from the earthquake.

D. TRANSPORTATION

Damage to the Bay Bridge left commuters searching for alternative routes of travel across the bay. Ferries proved to be an effective alternative, and service was increased to accommodate the needs of commuters while the bridge was being repaired. However, questions were raised as to how to quickly initiate an effective ferry service in times of an emergency. The State Department of Transportation subsidized the additional ferry service, as well as the Federal Emergency Management Agency, which has extended its subsidy to allow for continued service through June.

III. EMERGENCY RESPONSE

Overall, local governments responded swiftly and effectively to the crisis, establishing emergency response centers and coordinating efforts with utility companies and state agencies. Individual residents in damaged areas volunteered their assistance, and in general, remained calm and cooperative.

Several statewide agencies played a vital role in responding to the crisis and recovering damages. The Office of Emergency Services oversees the Emergency Broadcast System (EBS), over which the Federal Communications Commission has ultimate authority. The earthquake revealed, however, some confusion over how EBS is used and for what purpose.

The Department of General Services (DGS) is responsible for all state-owned buildings, some of which suffered loss of utility service as a result of the earthquake. DGS also manages the 911 emergency phone service. While the 911 number continued to operate in the hours following the quake, it was placed on a different priority network which allowed access only after longer than normal ringing time. Few citizens knew this, and, given the inconsistency of the regular phone service, many assumed the 911 system didn't work.

The Public Utilities Commission has jurisdiction over many areas affected by the quake, including energy utilities, telecommunications, ferry commuter service and mutual aid agreements. The threat of losing communication between state and local agencies prompted the PUC to call for the creation of a statewide emergency communications system when the Legislature met in special session.

The California Energy Commission, in accordance with its Energy Emergency Management Plan, monitored and issued daily reports on the status of gas and electric service, and damage to pipelines, transmission systems and oil refineries.

GENERAL QUESTIONS FOR CONSIDERATION BY THE COMMITTEE

DO THE UTILITIES HAVE ADEQUATE EMERGENCY RESPONSE PLANS?

WAS THE PUBLIC PROPERLY INFORMED ON HOW TO DEAL WITH THE DISRUPTION OF ELECTRIC, GAS, COMMUNICATION, WATER AND OTHER UTILITY SERVICES?

WAS THE EMERGENCY RESPONSE COORDINATION ADEQUATE BETWEEN STATE AND LOCAL GOVERNMENTS AND THE UTILITIES?

WHAT EMERGENCY RESPONSE LESSONS HAVE WE LEARNED SO OUR UTILITIES ARE BETTER PREPARED FOR THE NEXT DISASTER?

